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Appendix 31
Power Production and Energy

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Appendix 31A
Power Planning Study (PARO)

Prepared by:
California Department of Water Resources,
Power and Risk Office

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Phase 1

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North of Delta off-stream Storage (NODOS) Project

Power Planning Study (Phase 1)

This report summarizes the first phase of PARO's efforts in performing a Power Planning Study (Study) on the proposed NODOS Project (Project), and recommends additional analyses that need to be performed in the next phase of the Study. This document reports the assumptions, the modeling approach, and the results of the first phase of the Study. Additional analyses and modeling will be needed to further explore operational scenarios and design adjustments for the different Project components that would enhance its viability and value. Changes in design parameters and optimization of operational scenarios, will add valuable operational flexibilities that will be needed to participate in a complex energy market, yet, maintain Project diversions and deliveries.

1- Background

NODOS Project is an off-stream seasonal storage facility, proposed to be built, ten miles west of the town of Maxwell. The Project is in the planning, feasibility level, stage. The Project is composed of two main reservoirs (Sites and Funks), and a conveyance system that includes a number of physical components (intakes, pumps, canals, pipes, and terminal structures). The Project is designed to capture the annual seasonal cycle of the Sacramento River, where flood water could be stored during the high flow season and would be released during the low flow season.

The major storage component of the Project is Sites reservoir, a 1.8 million acre-ft reservoir that has a 14,000 acres inundation footprint. Sites reservoir storage capacity is generated through the construction of two main dams, Golden Gate Dam (310 ft Tall) and Sites Dam (290 ft Tall), and 9 saddle dams (ranging from 40 to 130 ft Tall), as shown in Figure-1. Two lower reservoirs, one existing and one new (Funks and the Terminal Regulating Reservoir), are configured to complement the Project complex, and to add the needed operational flexibility to the Project. The existing Funks reservoir would be enlarged to 5,000 acre-ft storage capacity and integrated, as part of the Project complex. And, a second reservoir would be a newly constructed, 1,200 acre-ft capacity, Terminal Regulating Reservoir, to the east of Funks reservoir.

Water would be delivered to and out of Sites reservoir through a network of pumping/generating plants and conveyances. Three pumping plants along the Sacramento River will be used to capture and divert water to the Project. The pumping plants are either existing/modified or new. The Tehama Colusa Pumping plant, and Canal, a 2,100 cfs capacity, would be the Project's upper most diversion point on the Sacramento River, near the city of red bluff. The Project's second diversion point from the Sacramento River is the Glenn-Colusa Irrigation District pumping plant and canal, a 3,000 cfs capacity plant, and a 3,000 cfs to 1,800 cfs capacity canal. And the third diversion point is a newly constructed Sacrament river pumping/generating plant and pipeline, a 2,000 cfs capacity plant. Figure-2 depicts the relative location of the three diversion points, along the Sacramento River, to Sites Reservoir. Funks reservoir will be the lower elevation collection point of the Project diversions from the Sacramento River, and a distribution point for water releases from Sites reservoir. A 5,900 cfs pumping/generating (5,100

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cfs generation capacity) plant will deliver the water into and out of Sites reservoir. A 1,200 acre-ft Terminal Regulating Reservoir will be constructed

Figure 1- Sites Reservoir Vicinity Map

with a pumping/generating plant of 1,800 cfs pumping capacity, and a 1,500 cfs generation capacity, to regulate diversions into and out of the Glenn-Colusa Canal.

2- Study Objective

The objective of the PARO Power Planning Study is to analyze the current/designed components, and the operational scenarios of the NODOS Project that resulted from the most recent CALSIM model studies, from a power planning perspective. Also, the Study will provide a transmission planning roadmap for the Project interconnection with available power grid systems (CAISO, WAPA, and SMUD) in the area. The Study results are meant to complement

the work done by the Division of Statewide Integrated Water Management (Sponsor) and their Consultants. The Study is implemented using current power market information and regulations, and available Power Portfolio models/tools to better evaluate energy costs and revenues of the NODOS

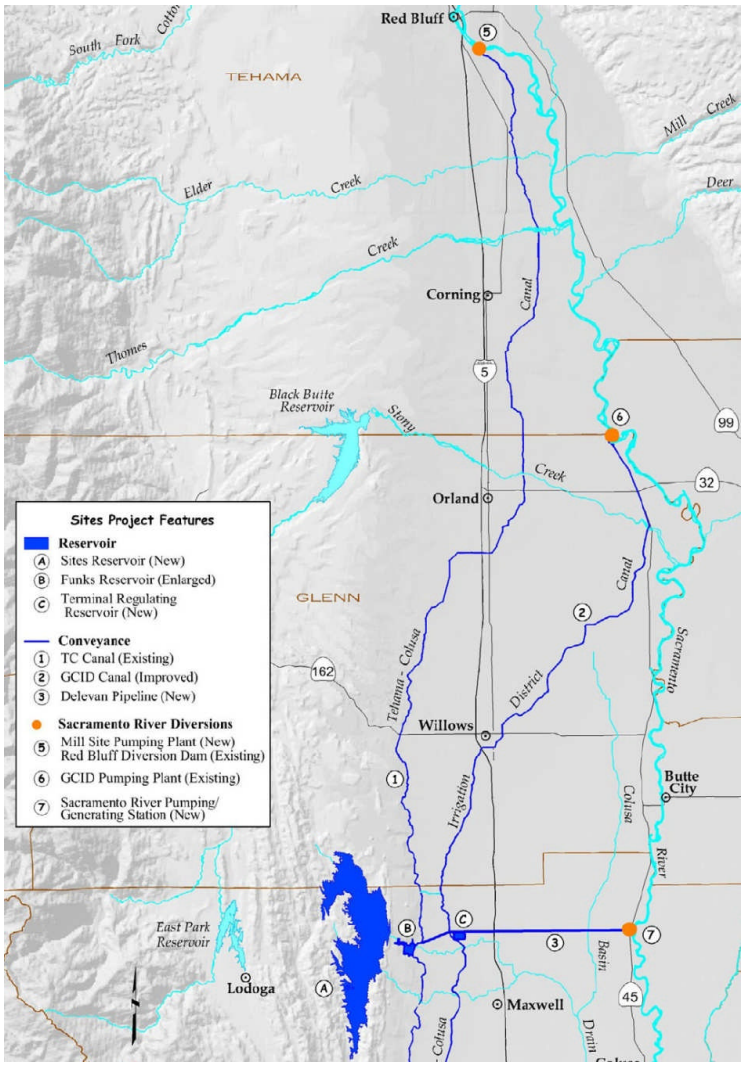

Figure 2- NODOS Project Components and Interconnection

Project. In light of the modeling results, the Study will make recommendations for modifications in the design parameters and in the operational scenarios/assumptions that may optimize and enhance the Project value. Also, the study will recommend further analysis that would be needed to study the modified operational scenarios and design parameters of the NODOS Project.

3-Modeling Approach

The Division of Statewide Integrated Water Management supplied PARO' s Power Planning Branch with the most recent CALSIM data (Benchmark Study Version 2: BST_2020D09D_ANNBENCHMARK_2_2), available to them, that describes the intended operations of the NODOS Project, based on the 82 years of historical hydrology record. PARO used the supplied CALSIM information to generate a 30-year outlook for the NODOS Project

operations. Using some statistical techniques, such as moving averages and frequency analysis, a Median case of Project deliveries (30-years time-series) is identified and used as a basis for the study analysis. In addition, two additional scenarios, representing a High and Low Project deliveries cases, are identified and used. The High and Low cases represent the range of uncertainty in deliveries that surrounds the Median Case.

Project operations, constraints, and assumptions, as envisioned by the NODOS Project team, are maintained and further optimized to maximize the value of the Project's assets. Optimizing Project's operations is done to capture market opportunities and price differentials between On-Peak and Off-Peak Energy. Also, optimization of Project's operations would translate the inherent excess design capacities of the Project's components (resulting from hydrology swings) to operational flexibility, and minimize operations and maintenance costs of the Project. The resulting time-series for all Project components for the 30-year planning period are the basis for the Project's Energy Portfolio value and risk.

One of the challenges in modeling a proposed project (i.e. future construction) is in choosing an appropriate project operations start date. The start date will determine the window of time of an Energy market (power and fuel) price forecast and the corresponding volatility term structure, that the analysis will be based on. The further out the anticipated project operations start date, the further the price basis for the analysis would separate from actual market data and current market trends. An alternative approach, to overcome this problem, is to assume that the project will be operational in the near future and value all assets and power needs accordingly. Similarly, operational, maintenance, and construction costs would be valued on the same start date basis. Then, costs and revenues would be discounted to a present value consistent with the analysis date. This approach will a good comparative framework, and minimize the inherent forecast errors (i.e. speculation) in both projects' energy value and in its construction cost.

Figure-3 depicts the different steps/tracks taken in reducing CALSIM data to Energy Portfolio system of asset and contract instruments (time series of monthly pumping and/or generation for each Project component). Also, Figure-3 describes the general modeling approach that was adopted in performing the Power Planning Study.

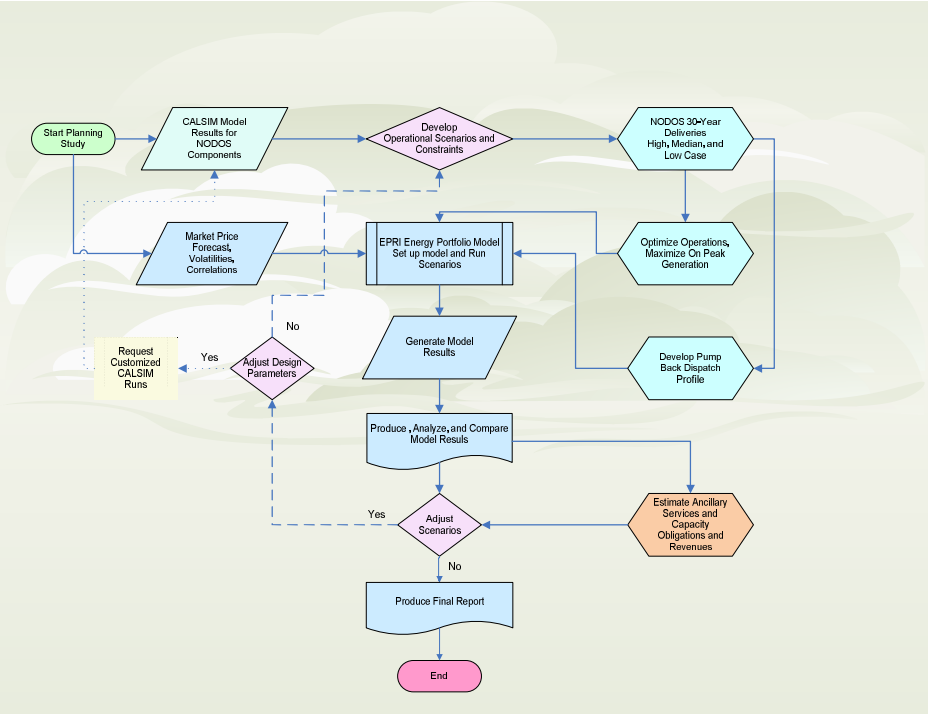

Figure 3- NODOS Project Power Planning Study Flowchart

EPRI Energy Portfolio Model

Current Power Portfolio Models available to PARO are used to execute the analysis for the NODOS Project. The Electric Power Research Institute (EPRI) Energy Portfolio Model (EPM), version 5, is used for this purpose. EPRI Fast Fit model, version 2.5, is used to describe the needed power and fuel price volatilities term structures, and the correlations between the different energy markets the NODOS Project will be participating in, or exposed to. The EPM is a computer software/model that is designed to help businesses manage value and risk in the power and energy markets. The NODOS Project Study used the EPM to value Project's assets and energy needs. The EPM is a module of a larger suite of individual modules, called the Energy Book System (EBS). Other modules within EBS are EPRI Contract Evaluator, EPRI Risk Manager, EPRI Retail Product Mix, and EPRI Fossil Asset & Project Evaluator. These modules were designed to meet the valuation and risk management needs of a targeted segment of the energy industry. Specifically, energy businesses that are exposed to a variety of risks, due to the extraordinary volatility in wholesale energy markets, specially price risk and uncertainty in the underlying fuel markets.

The objective of using the EPM model is to value the NODOS Project energy assets and contracts needs, and to assess its energy portfolio's exposure to major sources of risk. The EPM provides a set of templates that facilitates the description and evaluation of common types of power and fuel contracts, including supply contracts, standard and customized forward, and option contracts. It has the capabilities to model a number of physical assets, including full requirements contracts, power and fuel storage facilities, and generation assets. Many other assets can be modeled by combining two or more standard templates. The EPM requires the user to describe prices in the underlying commodity markets. The model characterizes each

commodity market by a forward price curve and a term volatility structure. A correlation matrix characterizes the behavior of pairs of commodity markets is also needed by the model. The correlation matrix is an important concept in evaluating portfolio risk, and assets with two underlying markets, such as spread options or generating units. The model can also be used to assess the value and risk implications arising from uncertainty regarding the future level of load and stochastic generation (e.g., "run-of-river" hydro electric generation).

The EPM calculates the current market value of any number of user specified assets. EPM can also calculate and report portfolio value, cash flows, and risk exposures. This includes assessing portfolio's exposure to both underlying commodity markets and customer loads. EPM allows users to manage price and load risk by applying methods that reflect the volatility and correlations between load and price. The market value of a resource depends on the cash flows it is expected to generate over its remaining life. Therefore, the market value of a generating unit depends on the difference between the value of the energy it is expected to produce and the value of the resources required for production. Market values fluctuate over time as conditions in the underlying markets fluctuate. EPM reports the market value of a resource or asset as the value of what it is worth today. One of the benefits of the EPM is that it will allow users to "mark-to-market" periodically each position in their book and thereby track gains and losses as they arise. EPM can report value and risk exposures on a weekly, monthly, quarterly, or annual basis over a user-specified time horizon.

Energy Forward Price Curves

Three sources of data are used to generate the energy price forecast that would be the basis for energy values for the Power Planning Study. The three sources are: forward energy "broker" quotations provided by Tullet Liberty ("Tullet")[1]; natural gas futures and natural gas futures basis as reported by the New York Mercantile Exchange ("NYMEX"); and forecasted spot electricity and natural gas prices as provided by Ventyx semi-annual structural forecast (formerly Global Energy Decisions, GED).[2]

The derived natural gas price curve is made up of Henry Hub ("HH") futures prices, adjusted for a specific local Hub through using basis prices (for HH to SoCal, or HH to PG&E Citygate, in this case). Basis prices represent the mark-up or discount in natural gas prices (due to transmission fees, congestion …etc) at a specific hub, relative to prices at HH. For HH futures, prices are obtained from the NYMEX website, and are current market closing prices for the date when the forward curve is being generated. There are 12 to 13 years of HH futures prices that are available through the NYMEX. These prices are extrapolated to cover the 25 years period that matches the Ventyx structural forecast period. The extrapolation is done through computing the growth/escalation rate of the last 4 years of the current market price quotations, and using the computed growth/escalation rate to extend the last year's available market prices.

For basis prices, there are two data sources: one is market basis prices; and the other is a structural forecast of basis prices provided by Ventyx. Ventyx provides monthly basis prices for

[1] Tullet is among other things an energy brokerage company that matches buyers and sellers.

[2] Ventyx is forecasting the actual day-ahead cash price that will occur in the sport markets in the future, not the price at which futures or forward contracts should be priced.

25 years to match its structural forecast period, reflecting potential changes in the energy market and their impacts on a specific local Hub prices (relative to HH prices). Market basis are available from NYMEX website, with basis prices available for three to five years (depending on the Hub location, whether it is SoCal or PG&E Citygate). The basis price forward curve is extrapolated to generate prices for a 25-year period by taking the last year's monthly quoted basis prices and repeating those prices for every month out to 25 years.

For SWP natural gas price forecast process, the average of the extended market basis and the structural basis (from Ventyx) is then taken and added to the Henry Hub extrapolated forward curve. The resulting natural gas forward curves for either SoCal or PG&E Citygate Hubs will be used in the study, where appropriate. The resulting natural gas forward curve for PG&E Citygate is shown in Figure-4, and is used for the NODOS Power Planning Study.

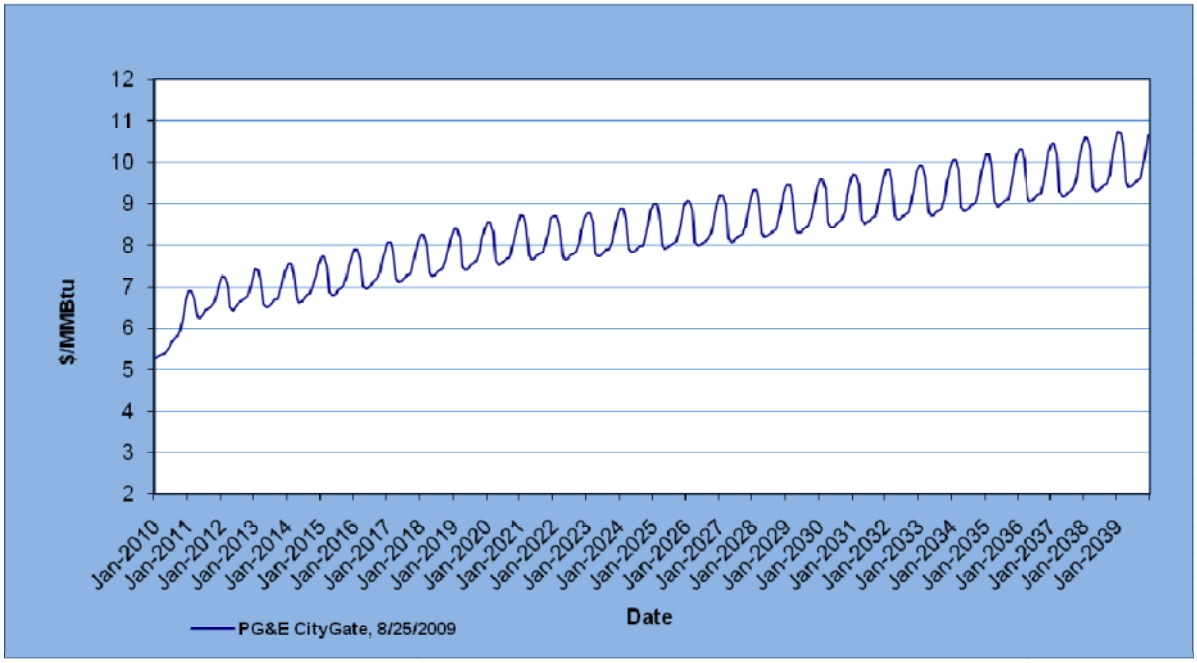

Figure 4- Natural Gas Price Forecast, Forward Curve for 2010 through 2039

For the power price forecast, the derived power forward price curve is comprised of two segments: market forwards; and synthetic forwards. The first segment uses the most current Tullet energy forwards quotations, for NP-15 and SP-15 market's different products (On-Peak, Off-Peak). This segment runs anywhere from 12 to 24 months (data availability is dependent on time of year that the power forecast is being generated).

The second segment of the price curve is the "synthetic" portion. The "synthetic" segment continues where the first segment stops, to complete the 25 years period to match the natural gas forecast period. There are two approaches that are being used to derive the "synthetic" portion of the forward curve. One approach is to calculate power prices using the natural gas forecasted prices (as described above) multiplied by historical implied heat rates.[3] The other approach is to

[3] Historical implied heat rates were calculated from 2004 - 2008 historical price data (5 years). Daily prices were averaged into monthly prices. The heat rate is calculated as the respective period's power price divided by the respective period's gas price.

multiply the forecasted natural gas prices by a forecasted heat rate, reported as part of the structural forecast, by Ventyx. The average of those two generated power forward price curves yields the resulting "synthetic" forward curve, that make up the second segment of the power price forward curve. The same process is repeated for each of the CAISO markets and its specific products (On-Peak and Off-Peak), with the appropriate underlying fuel markets. The resulting power forward curve for NP-15 is shown in Figure-5, and is used for the NODOS Power Planning Study.

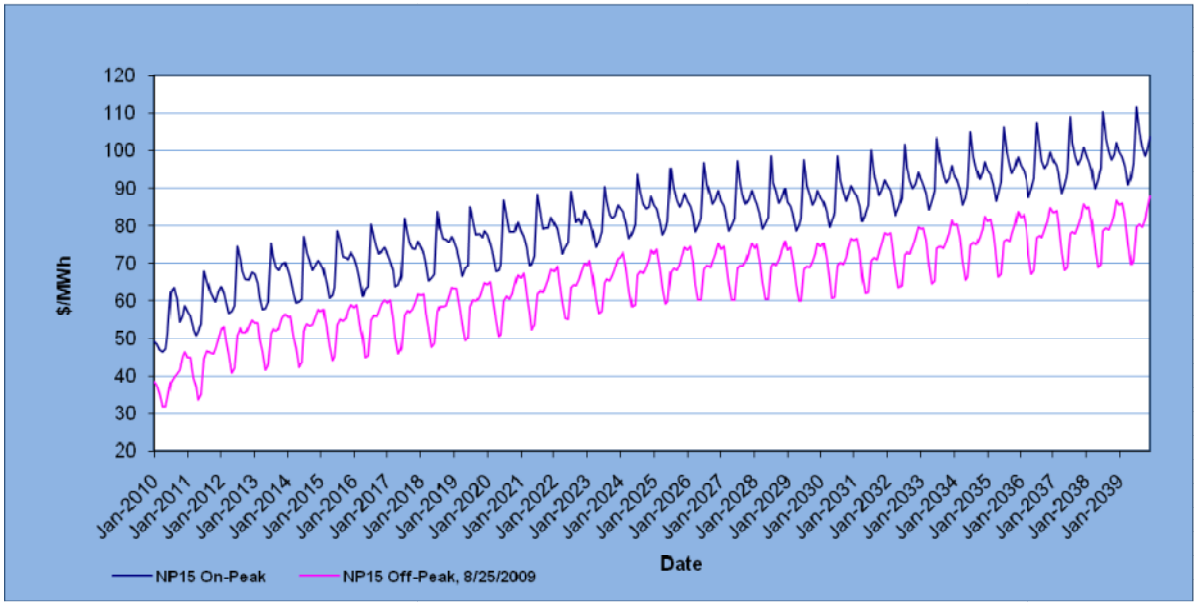

Figure 5- Power Price Forecast, Forward Curve for 2010 through 2039

4-Project Operations

For the purpose of this phase of the Power Planning study, the physical and operational attributes, of the NODOS Project components, that are used, and a schematic depiction of the Project's different components relative location, and their interconnection are shown in Figure-6.

The assumptions for the operations of the NODOS Project that are used for the current analysis are consistent with assumptions and scenarios used in developing the CALSIM model runs. Existing TC and GCID canals water diversions to the NODOS Project from the Sacramento River will take place, in a typical water year, from the month of November through March. Whereas, diversions to the NODOS Project using the proposed Sacramento River Pumping Plant are allowed year round. A total storage capacity at Sites Reservoir is assumed to be 1,800 TAF.

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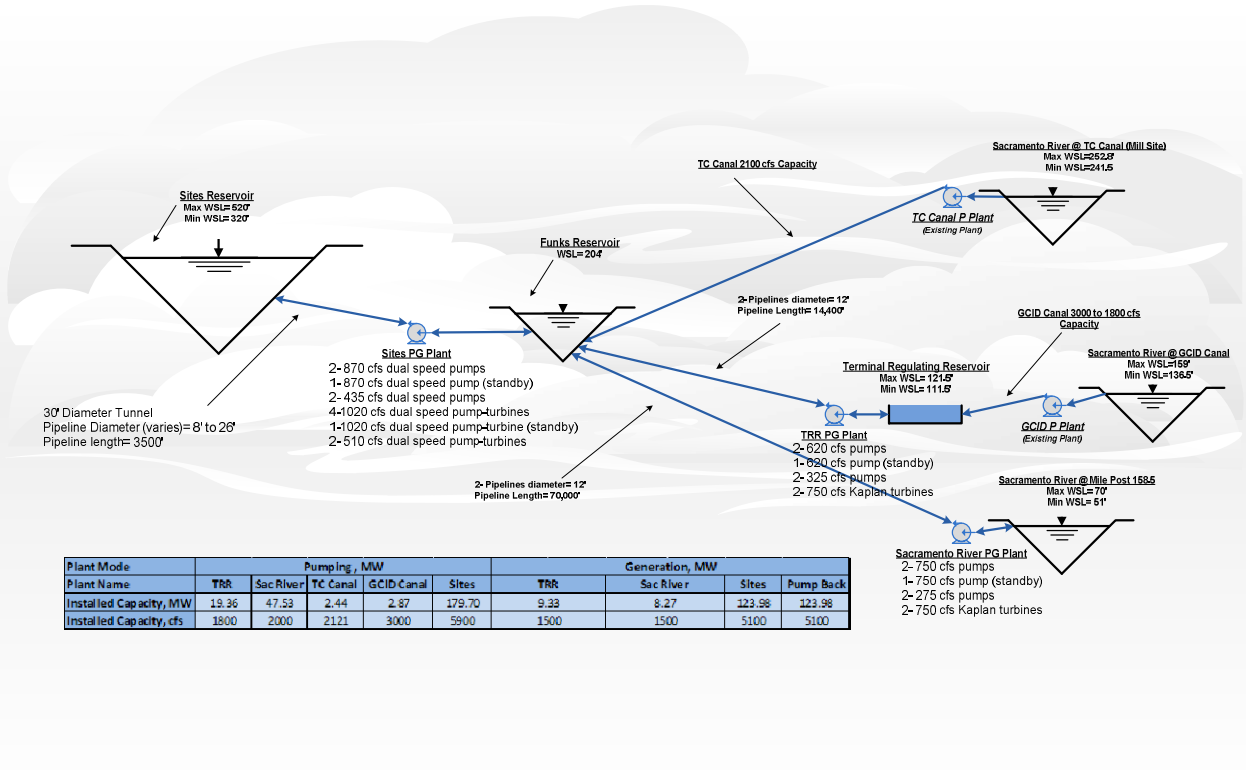

Plant Mode	Pumping , MW					Generation, MW			
Plant Name	TRR	Sac River	TC Canal	GCID Canal	Sites	TRR	Sac River	Sites	Pump Back
Installed Capacity, MW	19.36	47.53	2.44	2.87	179.70	9.33	8.27	123.98	123.98
Installed Capacity, cfs	1800	2000	2121	3000	5900	1500	1500	5100	5100

Figure 6- NODOS Project, Schematic of Conveyance and Storage Interconnection

Current operating rules for releases from Shasta Dam into the Sacramento River are maintained in developing the CALSIM runs for the NODOS Project. The rules for releases are governed by temperature and in stream flow requirements, contractual obligations, Delta water quality and outflow requirements, and flood control. Flood control releases are consistent with the U.S. Army Corps of Engineers, 1977, report titled; Report on Reservoir Regulation for Flood Control, Shasta Dam. For the evaluation of NODOS Project action alternatives, a generally consistent operations strategy was used for each alternative. Under each action alternative, the ability to implement this strategy effectively is subject to the operations objective focus of each alternative, the conveyance options included, and the coordinated operation of Sites Reservoir with other existing facilities. A more detailed discussion of the Sites Reservoir operations strategy could be found on Page 6-24 of the North-of-the-Delta Off stream Storage Plan Formulation Report.

In modeling the power needs for the diversion cycle of the NODOS Project, flat monthly pumping operations are assumed (24 hrs a day, 7 days a week). The pumping cycle is not optimized for this phase of the study. More in depth analysis and review of the CALSIM model runs are needed before an optimization scheme for the diversion cycle of the NODOS Project could be developed. However, with enough storage capacity at Funks reservoir and pumping capacity at Sites Reservoir, it would be more economical to get the On-Peak Sacramento River

diversions to Funks Reservoir and pump that water into Sites Reservoir in the Off-Peak hours (on daily basis), when power prices are less costly. This scenario could be further tested, and refined in the next phase of the Power Planning Study of the NODOS Project.

For the generation cycle (water release cycle) of the NODOS Project, an optimization strategy is developed to maximize the revenues of the Project's generation assets. For this strategy, the assumption is that all intended daily releases from Sites Reservoir will occur during the On-Peak hours, into Funks Reservoir, to capture the most value for the energy, associated with these releases. Incidentally, water will be released into the Terminal Regulating Reservoir and the Sacramento River up to the capacities of these facilities, during the On-Peak hours. This strategy will allow for capturing the most opportunity the market offers in energy value and capacity revenues. The residual water in Funks Reservoir (from the On-Peak Sites Reservoir releases) would be released during the Off-Peak hours. A key requirement for this strategy to be effective is that Funks Reservoir's active storage would be made available before the beginning of the next On-Peak cycle (i.e. next day's cycle). This optimization strategy allows for maximizing the revenues (Energy and Capacity) of the generation assets of the NODOS Project.

5-Power Portfolio Model

Using the most current CALSIM model runs, a Median Case, seasonal cycle, operational time-series for the NODOS Project is defined. The Median Case time-series period matches the 30-year planning period of the Project. The time-series is derived from the 82-year time-series resulted from the most current CALSIM runs (Benchmark Study Version 2: BST_2020D09D_ANNBENCHMARK_2_2). Current CALSIM runs are based on the available 82-year historical hydrology record. Total water diversions from the Sacramento River into Sites Reservoir is used as a criteria for isolating the 30-year (sequential) time-series that represents the Median Case for the Study. Moving averages and frequency analysis are used to reduce the 82-year record to a 53 potential scenarios for the operations of the NODOS Project. Then, the 53 scenarios are ranked, based on the cumulative volume of diversions into Sites Reservoir, and the median of these scenarios is identified with corresponding 30-year time-series that generated its value. The underlying 30-year time-series for all Project's components is also identified and grouped, to represent the 30-year Median Case for the NODOS Project operations. Project diversions and deliveries time series are then translated into pumping and generation in MWh, based on design capacities of the appropriate components of the Project. The resulting 30-year pumping and/or generation time-series for each of the Project components is developed using designed capacities, friction factors, storage elevations, and other information necessary to make these calculations. Figure-7 through Figure-11 show the Median Case time-series, for the 30-year planning period, for the operations of each of the Project components, in terms of utilized capacity in MWs, and it is the format needed to set up the EPM model.

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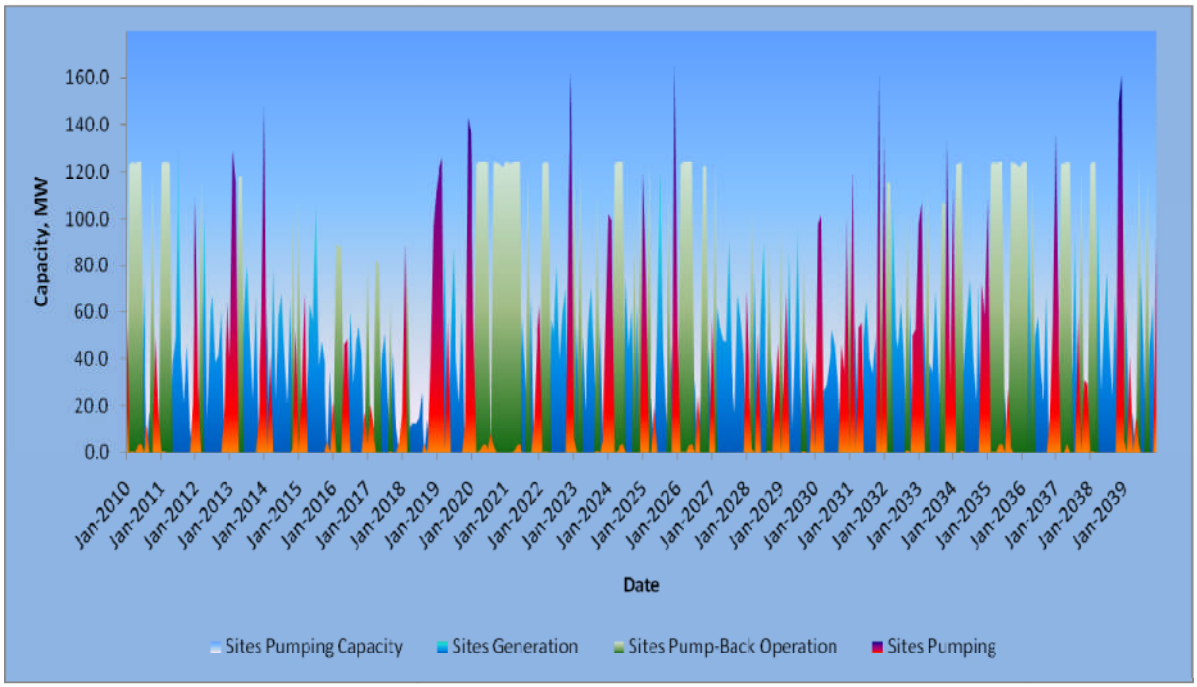

Figure 7- NODOS Project, Sites Reservoir Operations- Median Case

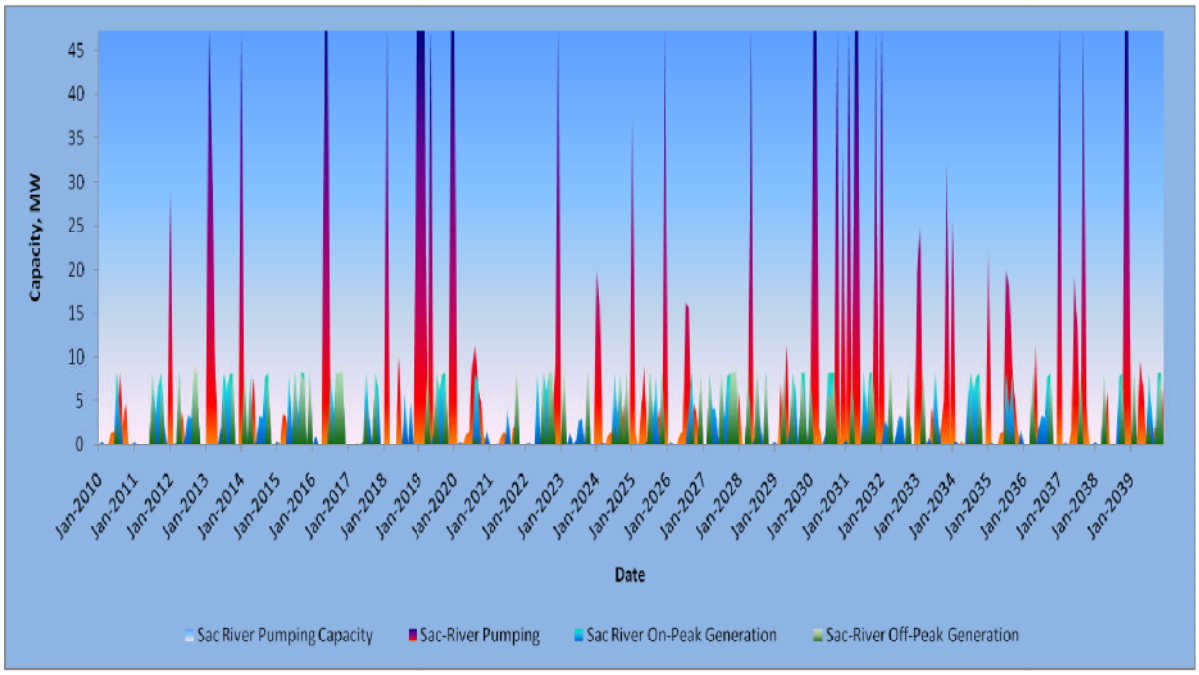

Figure 8- NODOS Project, Sacramento River Pumping Plant Operations- Median Case

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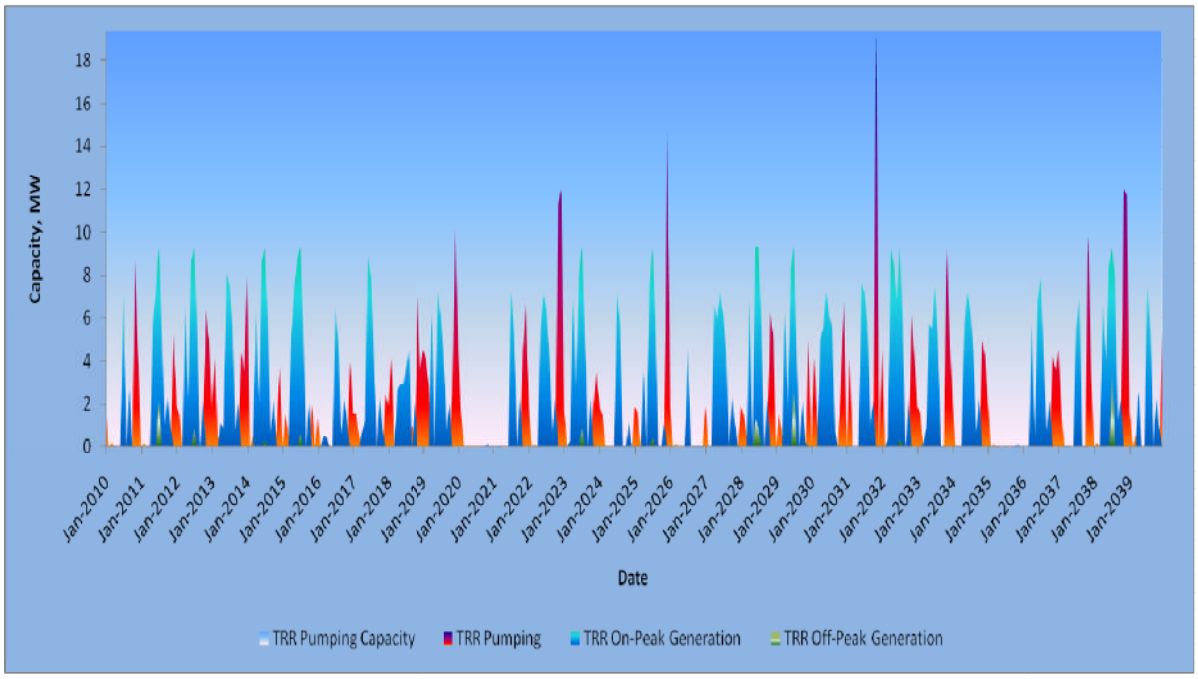

Figure 9- NODOS Project, TRR Pumping Plant Operations- Median Case

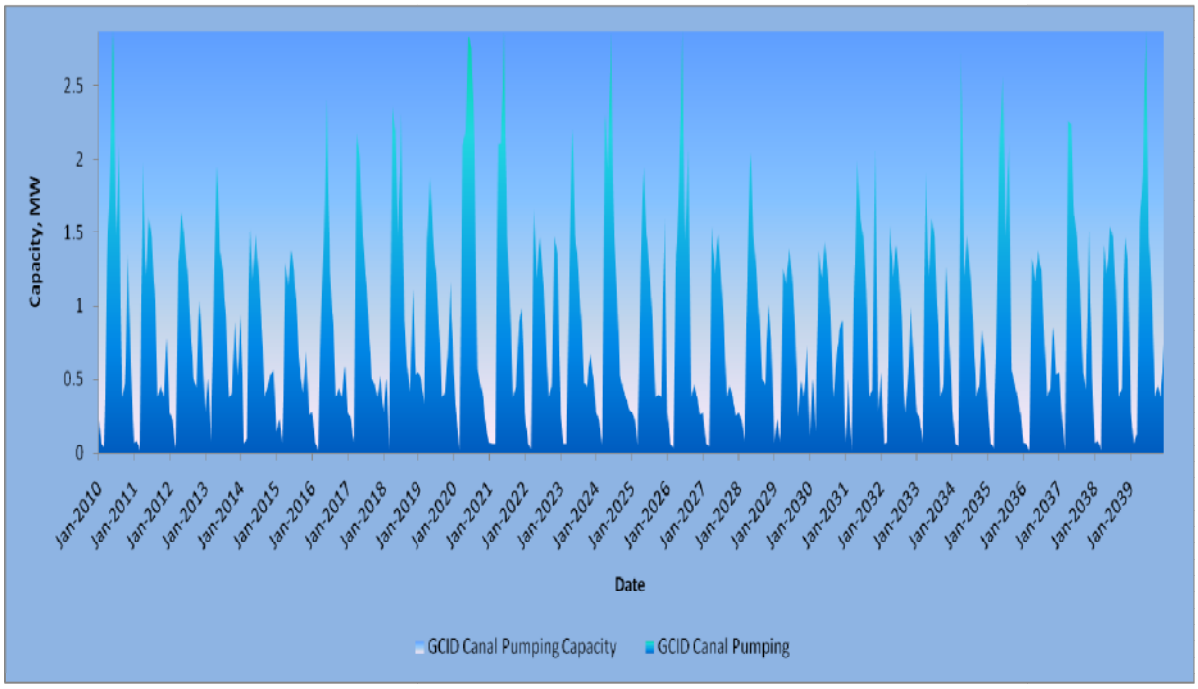

Figure 10- NODOS Project, GCID Canal Pumping Plant Operations- Median Case

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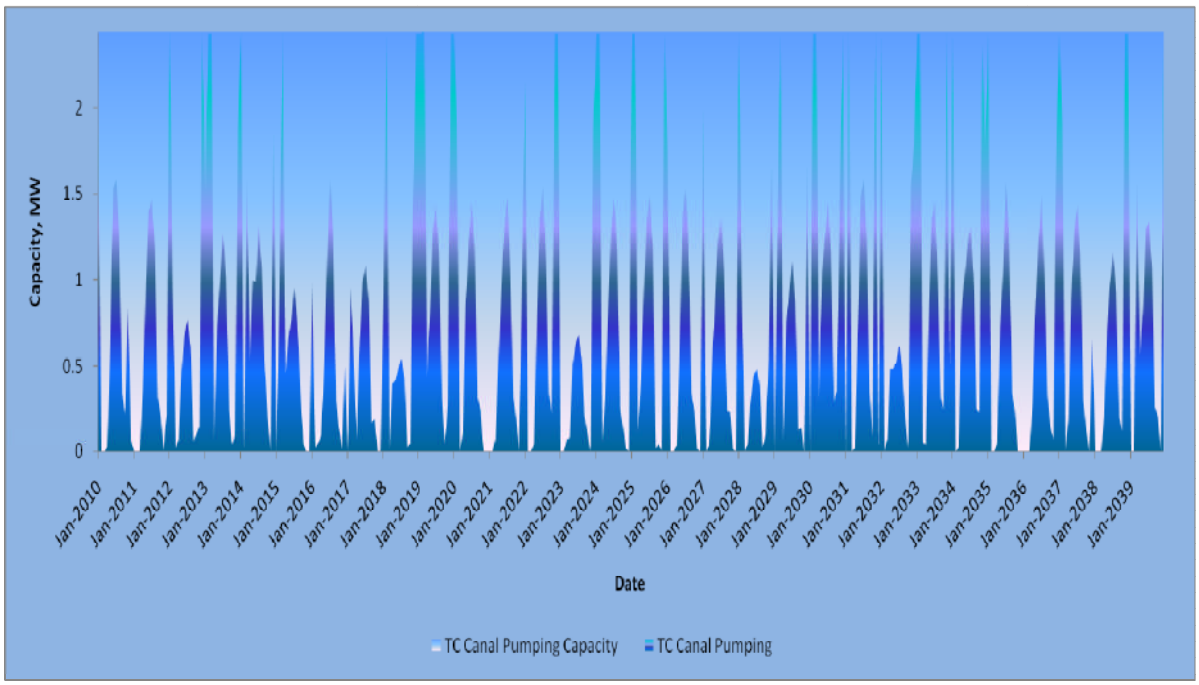

Figure 11- NODOS Project, TC Canal Pumping Plant Operations- Median Case

Also, Table-1 summarizes the monthly, 30-year planning period, pumping and generation data and capacities used to model the Median Case of the Project (See Appendix for complete version of Table-1). The information in Table-1 is the direct input data for the EPM model's different instruments, that are used to value the energy and risk associated with the operations of the NODOS Project.

NODOS Project- CALSIM Model Run- Median Deliveries Case, 30-year Planning Period

Plant Mode	Pumping , MW					Generation, MW					
Plant Name	TRR	Sac River	TC Canal	GCID Canal	Sites	TRR		Sac River		Sites	Pump Back
Installed Capacity, MW	19.36	47.53	2.44	2.87	179.70	9.33		8.27		123.98	123.98
Installed Capacity, cfs	1800	2000	2121	3000	5900	1500		1500		5100	5100
Date	All Hours					On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	On-Peak
Jan-2010	1.91	0.00	1.84	0.28	54.39	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2010	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.42	0.00	1.05	123.36
Mar-2010	0.20	0.00	0.00	0.04	0.67	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2010	0.00	0.00	0.02	1.30	0.00	0.07	0.00	0.00	0.00	0.46	123.71
May 2010	0.01	1.32	0.61	1.98	3.09	0.00	0.00	0.00	0.00	0.00	123.98
Jun 2010	0.00	1.54	1.53	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul 2010	0.00	0.00	1.58	1.47	0.00	7.24	0.00	8.27	2.65	73.96	0.00
Aug-2010	0.01	8.31	1.26	2.10	11.96	0.00	0.00	3.59	0.00	0.00	0.00
Sep-2010	0.00	2.11	0.34	0.38	0.00	2.69	0.00	0.00	0.00	17.72	0.00
Oct-2010	0.00	4.71	0.22	0.46	0.00	0.03	0.00	0.00	0.00	0.19	120.30
Nov-2010	8.70	0.00	0.84	1.35	49.47	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2010	3.97	0.00	0.06	0.59	14.95	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2011	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.34	0.00	0.86	123.48
Feb-2011	0.20	0.00	0.00	0.09	0.66	0.00	0.00	0.00	0.00	0.00	123.98
Mar-2011	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2011	0.01	0.01	0.37	1.99	0.00	0.05	0.00	0.00	0.00	0.32	123.79
May-2011	0.00	0.00	0.99	1.20	0.00	5.68	0.00	0.00	0.00	38.39	0.00
Jun-2011	0.00	0.00	1.40	1.60	0.00	7.35	0.00	0.00	0.00	49.31	0.00
Jul-2011	0.00	0.00	1.47	1.47	0.00	9.33	2.18	8.27	8.27	132.52	0.00
Aug-2011	0.00	0.00	1.18	1.11	0.00	5.54	0.00	3.38	0.00	41.38	0.00
Sep-2011	0.00	0.00	0.32	0.38	0.00	1.07	0.00	6.81	0.00	21.10	0.00
Oct-2011	0.00	0.00	0.20	0.46	0.00	2.32	0.00	8.27	6.70	46.38	0.00

CALSIM Model Results = 30-Years, Monthly Pumping & Generation
3 Study Cases / Levels of Deliveries: High Case, Median Case, Low Case

Table 1- NODOS Project, Pumping and Generation Time Series

The High and Low Cases, seasonal cycle, operational time-series for the NODOS Project are also identified using the highest and lowest 30-year cumulative deliveries (sequential) into Sites Reservoir. The High and Low cases are needed to define the uncertainty in the NODOS Project's revenues that would result from deliveries deviating from the Median Case (i.e. uncertainty from hydrology and corresponding operations). The resulting range of values for the Project's power portfolio, from modeling the High and Low cases, represents the uncertainty in Project's value from water deliveries. However, this range represents the extreme "bookends" in Project deliveries relative to its Median Case of deliveries, and not necessarily two plausible scenarios.

Daily pump-back operations of the NODOS Project facilities are considered to better use available Project facilities, and to capture market opportunities (price differential between On-Peak and Off-Peak), that would generate a revenue stream for the Project. The pump-back operations are limited to the months that the monthly average diversions into the NODOS Project are less than 200 cfs. For each month in the three CALSIM deliveries scenarios (High, Median, Low) for the NODOS Project, the available generation capacity at Sites pumping/generation plant is estimated, based on the available head at Sites Reservoir (from the previous month's operations). Then a dispatch profile for the daily pump-back operations is generated based on market opportunities, pumping/generation efficiency of the Project, and available storage at Funks Reservoir. Ultimately, the pump-back operations are modeled in the EPM model through the use of a dispatch unit instrument. The dispatch unit is set up with a heat rate that represents the collective efficiency of the full cycle pump-back operation of the NODOS Project. Ultimately, the model is set up to produce the NODOS Project pump-back potential based on the Project and market economics. The model is set up to value the consumed energy needed to lift the water into Sites Reservoir, so it could be released and generate energy during the on-peak hours, within the Project inherent efficiencies and the limits of available storage at Funks Reservoir. The Median Case dispatch profile for the pump-back operations of the NODOS Project is depicted in Figure-12

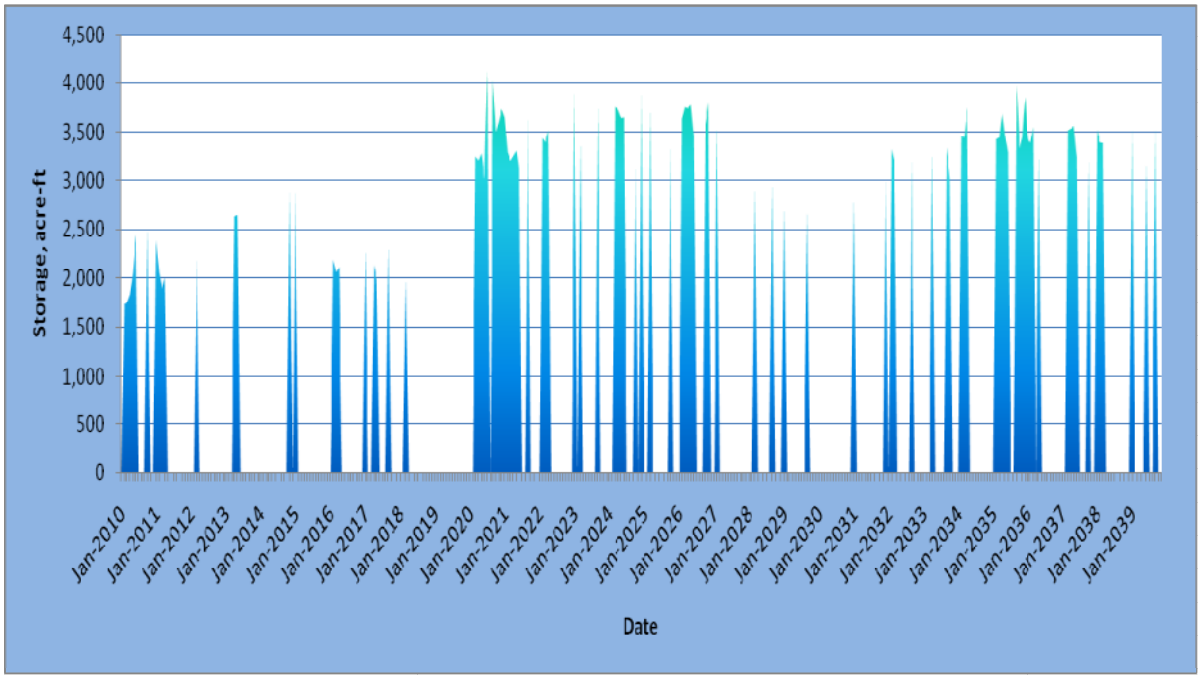

Figure 12- NODOS Project, Funks Reservoir Pump-Back Operations- Median Case

Additional information needed to run the EPM model includes forward prices, volatility term structure, correlations (between different underlying markets), delivery hours, and generation blocks. All necessary information are either generated through the EPM model's graphic user interface, or externally developed and input into the model. The EPM model runs included the High, Median, and Low cases of the Project operations.

6-Modeling Results

Power Portfolio Energy Value

A summary of the EPM model results (energy value and risk) for the three CALSIM deliveries scenarios (High, Median, and Low) is shown in Table-2. The results are in $1,000 of Net Present Value (NPV), for the 30-years planning period, for each of the Project's cycles, and components. For the purposes of this Study, NPV is defined as the current market value of the net portfolio's cash flows in $1,000 of present value. The results are grouped based on the operational cycle of the Project facilities. The basic assumption is that pumping at all Project facilities is incidental to water diversions from the Sacramento River, except during pump-back operations. And generation is incidental to the NODOS Project water release/deliveries cycle, except during pump-back operations. Revenues from pump-back operations are presented separately, to allow for a better break down of costs and revenues, of Project water diversions and deliveries. In studying the modeling results, it is important to keep in mind that the numbers present the energy costs and revenues, and not the water use benefits of the Project. Also it could be noted that, for the High deliveries scenarios, pumping costs are significantly higher because of consistently higher water surface elevations at Sites reservoir for the 30-year planning

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period (Higher Pump Head). Another note, the pump-back operations will net more revenues under the Low deliveries scenarios because of the fact that Project facilities would be less frequently used, and more opportunity (months) would be available to perform the pump-back operations.

Pumping-Generation Site	CALSIM Deliveries		
	Low	Median	High
NODOS Pumping	Period Total, NPV ($1000)		
TC Canal Pumping	-6,582	-6,971	-7,297
GCID Pumping	-7,176	-7,545	-7,576
Sac River Pumping	-47,814	-45,386	-57,411
TRR Pumping	-7,853	-9,069	-9,679
Sites Pumping	-154,672	-158,002	-180,981
Subtotal	-224,097	-226,974	-262,944
NODOS Generation	Period Total, NPV ($1000)		
Sites Geneneration On-Peak	128,991	133,478	136,954
TRR Generation On-Peak	16,487	17,743	18,375
TRR Genenration Off-Peak	231	204	220
Sac River Generation On-Peak	20,882	21,461	21,321
Sac River Genenration Off-Peak	7,810	8,402	8,699
Subtotal	174,401	181,288	185,569
PumpBack Operations	65,440	59,838	53,579
NODOS Project Total	15,744	14,151	-23,797

NODOS Risk Metrics	Period Total, NPV ($1000)		
Value-at-Risk	2,639	2,067	2,472
Cash-Flow-at-Risk	69,641	73,035	80,579

Notes
Cash Flow reported pre-tax in PV($000).
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Table 2- NODOS Project, Summary Modeling Results, NPV ($1000)

The total pumping costs, of the Median Case of deliveries, for the Project in NPV are $226,974,000, whereas the corresponding generation revenues, associated with Project releases, in NPV are $181,288,000. Additional revenues in NPV of $59,838,000 would be realized from the Pump-Back operations (daily operations) of the Median Case deliveries scenario. Pump-back operations are limited to the months that the Project's average pumping (diversions) is less than 200 cfs (i.e. Project components are not in use).

The NODOS Project net total value (generation revenues-pumping cost) for the Median Case in NPV is $14,151,000. A High and Low NODOS Project net total values (corresponding to the High and Low cases) in NPV are $-23,797,000 and $15,744,000, respectively. Table-2 provides a summary break down of the net Project values based on the contributions of each Project component, and in each of the Project's operational cycles (pumping and generation cycles).

Table-2 is the NODOS Project Power Portfolio annual cash flow, in present value in $1,000s, for the Median Case of deliveries. The annual cash flows are reported, in present value, through the 30-year planning period of the Project. The cumulative value of the cash flows in present value for each Project component represents the NPV of that component. The sum of the NPV of all Project components is the net total value of the Project.

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Median Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total								
TC Canal Pumping	-6,971	-283	-211	-327	-448	-396	-239	-216	-168
GCID Pumping	-7,545	-426	-322	-344	-332	-310	-266	-282	-307
Sac River Pumping	-45,386	-642	0	-1,209	-3,076	-1,952	-212	-2,593	-15
TRR Pumping	-9,069	-515	-210	-548	-520	-473	-130	-190	-200
Sites Pumping	-158,002	-4,685	-807	-8,475	-12,290	-8,794	-3,206	-3,934	-1,18
Subtotal	-226,974	-6,551	-1,551	-10,904	-16,666	-11,925	-4,053	-7,215	-1,87
NODOS Generation	Period Total								
Sites Geneneration On-Peak	133,478	2,377	8,056	8,804	6,920	8,886	9,194	5,277	3,652
TRR Generation On-Peak	17,743	403	1,192	1,276	943	1,201	1,269	536	815
TRR Genenration Off-Peak	204	403	1,192	1,276	943	1,201	1,269	536	815
Sac River Generation On-Peak	21,461	494	1,105	1,180	1,203	1,328	1,563	1,215	832
Sac River Genenration Off-Peak	8,402	59	362	607	318	500	695	643	258
Subtotal	181,288	3,736	11,908	13,142	10,327	13,117	13,991	8,207	6,371
PumpBack Operations	59,838	1,347	1,103	383	883	581	628	1,174	1,704
NODOS Project Total	14,151	-1,468	11,459	2,622	-5,455	1,772	10,565	2,167	6,197

30-year Planning Period

Net Present Value is the current market value of the net portfolio's cash flows in $1000 of present value

Notes
Cash Flow reported pre-tax in PV($000).
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Report updated at 02:28:53 PM.

Table 3- NODOS Project, Modeling Results, Annual Cash Flow, NPV ($1000)

Figure-14 graphically depicts the NODOS Project Power Portfolio cash flows in each delivery period for the 30-year horizon modeled in EPM, for the Median Case of deliveries. The solid "diamond" markers represent the present value of the Portfolio's cash flow for a specific period. And the High and Low "error" bars correspond to the upper and lower percentiles of the cash flow distribution estimated using the Monte-Carlo simulation. The error bars correspond to the 95% and 5% confidence limits of the cash flow distribution for that specific period.

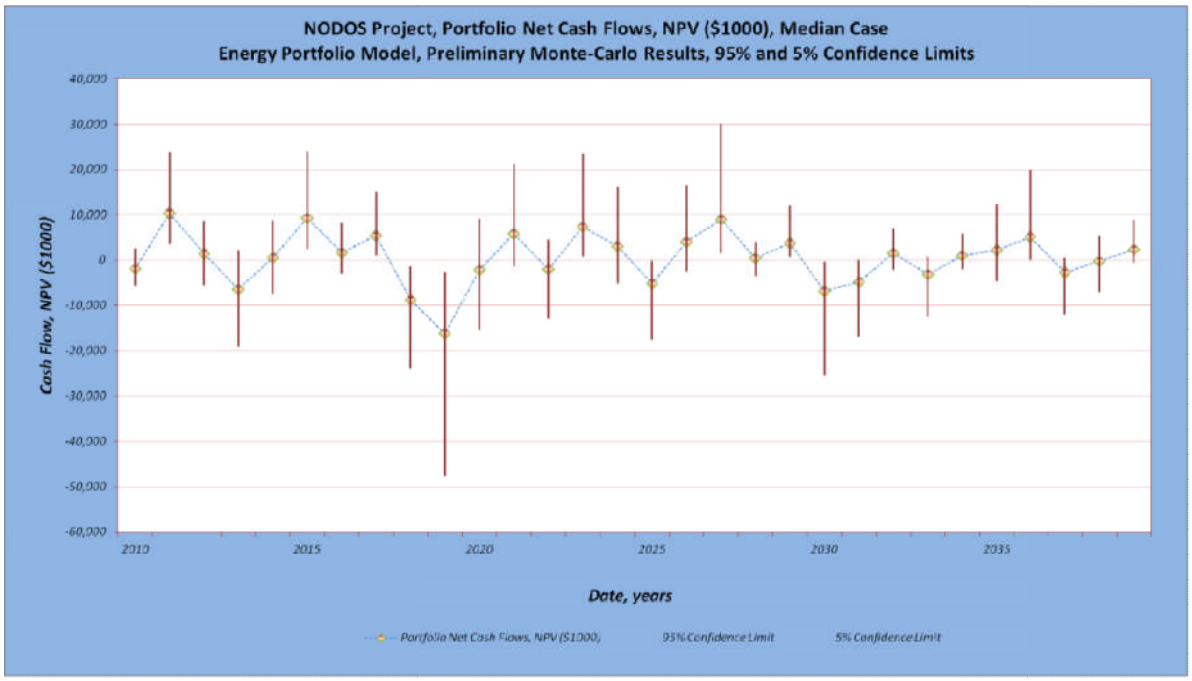

Figure 14- NODOS Project, Portfolio Cash Flow, 2010 through 2039

Power Portfolio Risk Metrics

EPM model results, also, include a description of the financial risk resulting from uncertainty and volatility of the underlying fuel and power markets, in which the NODOS Project will be participating. The EPM model produces risk metrics associated with a portfolio of assets that correspond to the exposure of an individual asset in a portfolio, or risk metrics that describe the collective risk associated with the portfolio, as a whole. The EPM model uses a Monte-Carlo based algorithm (random generation based) to generate a pre-assumed log-normal distribution of the cash flow of an asset. The generated distribution is based on the specific period's marginal volatility, time to delivery, and the analysis date. The number of draws for the Monte-Carlo approximation (2,000 draws are being used for this Study), the specified confidence level (95% is being used for this Study), the volatility and correlations of the underlying markets, and the holding period, (all are input parameters to EPM) are the basis for the Monte-Carlo generated distribution of the cash flow of an asset. Financial risk associated with an asset or a portfolio of assets could be measured from the Monte-Carlo generated distribution.

Two commonly used risk metrics in describing the financial risk associated with a portfolio are the Value-at-Risk, and Cash-Flow-at-Risk. Value-at-Risk is a measure of the potential for loss on a Portfolio of assets or an asset value, within a specified holding period. Value-at-Risk is a commonly used risk metric to describe the risk associated with the value of a portfolio of assets within a short period of time (days). A second risk metric is a Cash-Flow-at-Risk, and is defined as the maximum loss that could be realized over a specified holding period at a specified confidence level. Other risk metrics, such as Price Exposure, could also be reported, as partial output of the EPM risk report. Price Exposure measures an asset exposure to a specific price risk, and reports how many dollars of the value of that asset is at stake.

The NODOS Project Power Portfolio cumulative probability distribution is depicted in Figure-15. It provides the cumulative probability distribution of the NODOS Project portfolio's cash flows around its mean value. On Figure-15, the Cash-Flow-at-Risk could be measured from the difference in NPV of Portfolio cash flows between the 50% and the 0% probabilities, for the pre-specified confidence level (95% in this case). Cash-Flow-at-Risk for a specific period could also be generated. The annual Cash-flow-at-Risk is graphically depicted on Figure-15, as the difference between the "Diamond" markers and the lower end of the error bar, for that specific period. Value-at-Risk and Cash-Flow-at-Risk of the NODOS Project are summarized, for the three deliveries cases (High, Median, and Low), in Table-2.

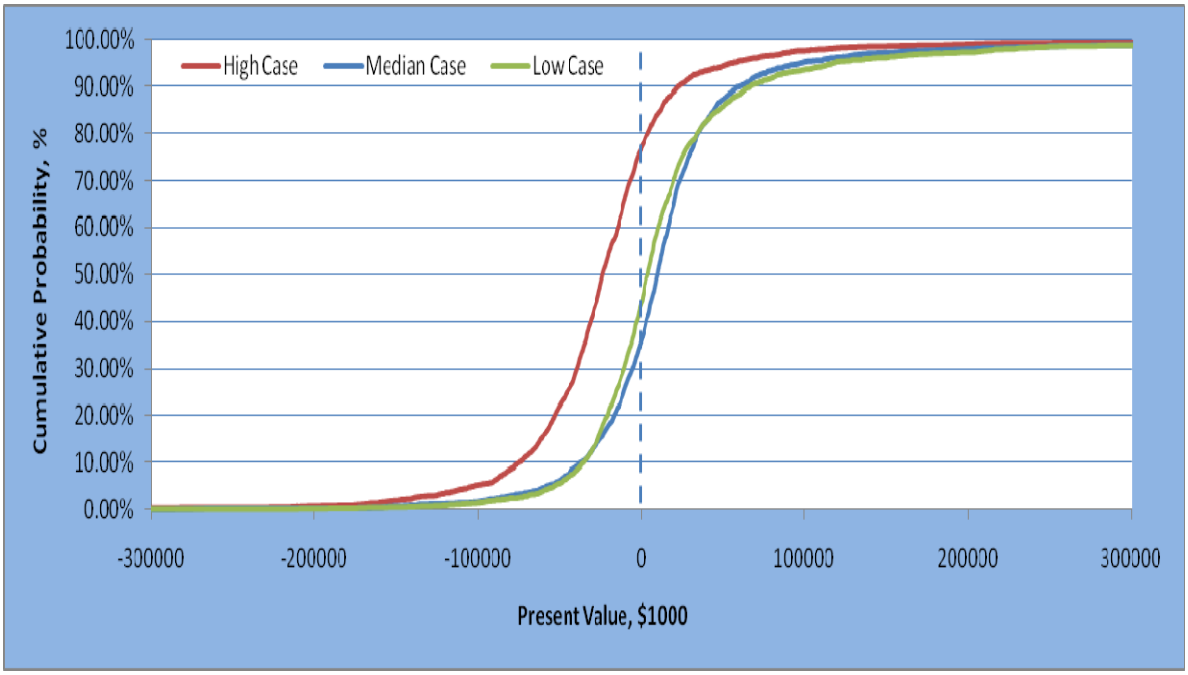

Figure 15- NODOS Project, Cumulative Cash Flow Distribution Comparison

7-NODOS Project Capacity and Ancillary Services

Capacity Value Analysis:

CAISO is charged, under both California law and by the Federal Energy Regulatory Commission (FERC), with the responsibility of maintaining and operating a reliable grid system (transmission system) – a system that is under their operational control. System reliability is a very complex subject, as it is inextricably intertwined with market economics-a subject that is beyond the scope of this Study. Nevertheless, a crucial element of reliable grid operations, and relevant to the NODOS Project operations, is Resource Adequacy (RA). CAISO through their FERC approved Tariff, along with RA requirements by adopted State CPUC mandates, are intended to establish a process that ensures that capacity procured for RA purposes is available when and where it is needed. For the NODOS Project, RA obligations are a pseudo financial obligation in pumping/diversion cycle (Self-Provided), and a revenue opportunity in generation/release cycle.

There are several ways through which capacity value of a power asset can be harnessed. One way is the consideration of RA capacity value utilization. The state of California has embraced an RA mandate/regime (AB380) in order to make power resources available when and where they are needed, and to promote investment on new resources and maintenance of existing facilities. The California Public Utilities Commission (CPUC) governs the RA program for entities under its jurisdiction and the CAISO monitors the RA program implementation by utilities, including publicly owned utilities and government agencies. Currently, RA capacity is being traded bilaterally through a solicitation and bidding process and the price of capacity negotiation is opaque. However, the CAISO Tariff requires the CAISO to procure capacity as a backstop, should a load serving entity fail to meet its RA obligation showings. The RA obligation showings take place in an annual showing, as well as monthly showings. The FERC has authorized the CAISO to charge or pay the default RA capacity procurement price of $41/KW-year. In terms of capacity rate determination needed to estimate RA revenues and/or obligations, three options can be considered:

1) Bilateral trade capacity value: It is not transparent and the rate at which the capacity is procured is unknown. It could be lower in some months and higher during summer months (seasonal trend).
2) Default Interim Capacity Procurement Mechanism (ICPM) procurement rate: The FERC approved CAISO tariff rate of $41/KW-year is the backstop procurement rate. It is constant for all the months, and represents an implied cap on RA value in the CAISO market. This default rate is subject to change in the upcoming stakeholder process at the CAISO and subsequent FERC approval.
3) Based on escalated 2007 CEC costs of generation technologies: Capacity value would be the revenue stream from selling capacity needed to make an economic/feasible investment in a simple cycle generation unit. Modeling a 100 MW simple cycle generation unit, using the escalated 2007 CEC costs of generation technologies, revealed a capacity revenue requirement of $25.19/KW-year.

For the NODOS Project, RA obligations for the pumping cycle are met through the "Self-Provided" provisions of current CAISO Tariff, providing that it meets CAISO participating load requirements. In reality, the NODOS Project would meet its RA obligation in the pumping cycle through a load dropping scheme, and would satisfy CAISO's RA requirements. Capacity revenues and obligations for the NODOS Project are estimated using the $25.19/KW-year value described in #3 above, as this value represent a conservative estimate relative to the ICPM in #2. The monetary value of meeting RA obligations for the NODOS Project, which can be described as avoided cost, have a NPV of $12,895,000 for the Median Case deliveries and the 30-year planning period. For the NODOS Project generation cycle, the corresponding potential capacity revenues are estimated at a NPV of $29,946,000. It is assumed that the NODOS Project will offer capacity in the CAISO market, to participants that need to secure capacity to meet their RA obligations. Figure-16 depicts the NODOS Project RA obligations and Revenues streams in NPV, for the Median Case Deliveries and the 30-year planning period.

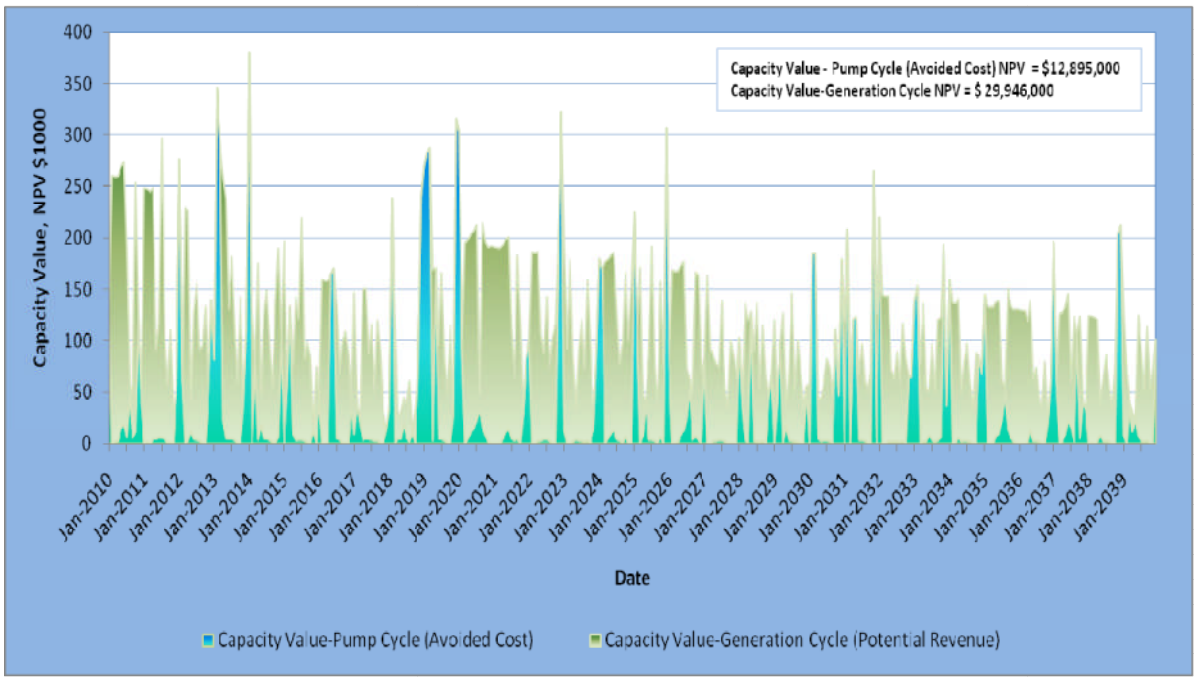

Figure 16- NODOS Project, Capacity Revenues and Obligations, Median Case

Ancillary Services Potential

The CAISO procures Ancillary Services (AS) to ensure that it has adequate reserve generation capacity to maintain the electric system reliability and system frequency, by matching generation and load at all times under both normal and abnormal operating conditions. In their restructured electricity market (Post MRTU), CAISO obtains AS services through a competitive bidding process. On a daily basis, CAISO procures four primary AS services (regulation, spinning reserves, non-spinning reserves, and replacement reserves), in day-ahead and in hour-ahead markets. The two additional AS that CAISO procures are black-start and voltage support services, which are procured on a long term basis. The four primary AS are procured on separate basis, in a competitive open market environment, designed as being an integral component of the energy market. The Primary AS are defined by CAISO, as follow:

1-Regulation: Generation that is on-line, and synchronized with the CAISO controlled grid so that the energy can be increased or decreased instantly through automatic generation control (AGC), directly by the CAISO monitoring system. Regulation is used to maintain continuous balancing of resources and load within the CAISO controlled grid, as well as maintains frequency during normal operating conditions.

2-Spinning Reserve: Generation that already on-line, or "spinning", with additional capacity that is capable of ramping over a specified range within 10 minutes and running for at least two hours.

3-Non-Spinning Reserve: Generation that is available but not on-line, that is capable of being synchronized and ramping to a specified level within 10 minutes, and capable of producing dispatched energy for at least two hours.

4-Replacement Reserves: Generation that is capable of starting up if not already operating, synchronized with CAISO controlled grid and ramping to a specified load within one hour, and running for at least two hours.

The two remaining AS (voltage support, and black-start) are procured primarily through the Reliability Must Run (RMR) contracts. CAISO is responsible for conducting a competitive market of the four primary AS on behalf of the market participants.

For the NODOS Project pumping/generating facilities, if interconnected to CAISO grid, AS would be a significant operations and costs/revenues concern. For the NODOS Project to participate in the CAISO AS market, the CAISO Tariff requires a participating Generator to undergo a certification process- the process details are beyond the scope of this Study. CAISO Tariff states that a participating generator is a generator or other seller of Energy or AS through a Scheduling Coordinator over the CAISO grid from a generating unit with a rated capacity of 1 MW or greater, or from a generating unit providing AS and/or Imbalance Energy through an aggregation arrangement approved by the CAISO- a criteria that the NODOS Project will clearly meet. The CAISO accepts market bids for Energy and AS only from Scheduling Coordinators on behalf of the participating generator.

A preliminary assessment for AS opportunities for the NODOS Project is conducted using the Median Case CALSIM deliveries, for the 30-year planning period. Although the opportunity exists for the Project's facilities to participate in providing AS in the CAISO day- ahead and hour- ahead markets, the current analysis focuses on the day-ahead market opportunities. More thorough analysis will be conducted in the next phase of the study as the NODOS Project evolves into an advanced stage, and more granular details are developed through improved modeling efforts (daily, and hourly time steps) for Project operations. In general, participation in the AS market is an opportunity to translate inherent operational flexibilities, and excess capacities into revenue opportunities. For the NODOS Project, the ultimate priority is to maintain the intended seasonal water cycle diversions/deliveries that the Project was designed to capture. Therefore, revenue opportunities from participating in the AS market will have to be designed as an incidental activity to satisfying the intended Project's operations. More operational scenarios will be considered in the next phase of the Study, where operations would be optimized to capture the most revenues the market offers for both Energy and Ancillary Services, coincidently.

The restructured CAISO market (post MRTU) is still evolving, and price signals have not necessarily matured, to reflect long term market trends for AS prices. Also, price forecasts for AS marginal prices, for the CAISO market, are not available, for now. The best available option is to use recent historical AS hourly clearing prices for the CAISO market- available on CAISO's OASIS web site. For the current phase of the Study, six months of historical hourly CAISO AS clearing prices are used as a basis for the NODOS Project AS revenues assessment.

For the pumping cycle, the NODOS Project will have the opportunity, as a participating load (meeting CAISO Tariff definition), to sell Non Spin AS (as described in #3 above) into the CAISO market. However, the AS participation will be limited to the Sites Reservoir pumping plant, so that water diversions from the Sacramento River could be maintained, at all times. The assumption is that if the pump load at Sites Reservoir pumping plant got dropped by CAISO, water diversions from the Sacramento River could be stored in Funks Reservoir for the period of time CAISO needs the service- currently, a two hours maximum period for a Non Spin AS.

Stored water at Funks Reservoir could then be pumped into Sites Reservoir at a later time within the same day. Current CALSIM runs indicate that in months with potentially highest water diversions from the Sacramento River, it is possible to use the excess pumping capacity at Sites Reservoir pumping plant to move the water stored in Funks Reservoir, resulting from a Non Spin AS called upon by CAISO. More detailed analysis is needed for the pumping cycle in the next phase of the Study to ensure that participating in the Non Spin AS market would not hinder water diversions from the Sacramento River. Figure-17 depicts the Non Spin AS potential in MWh, for Sites Reservoir pumping plant.

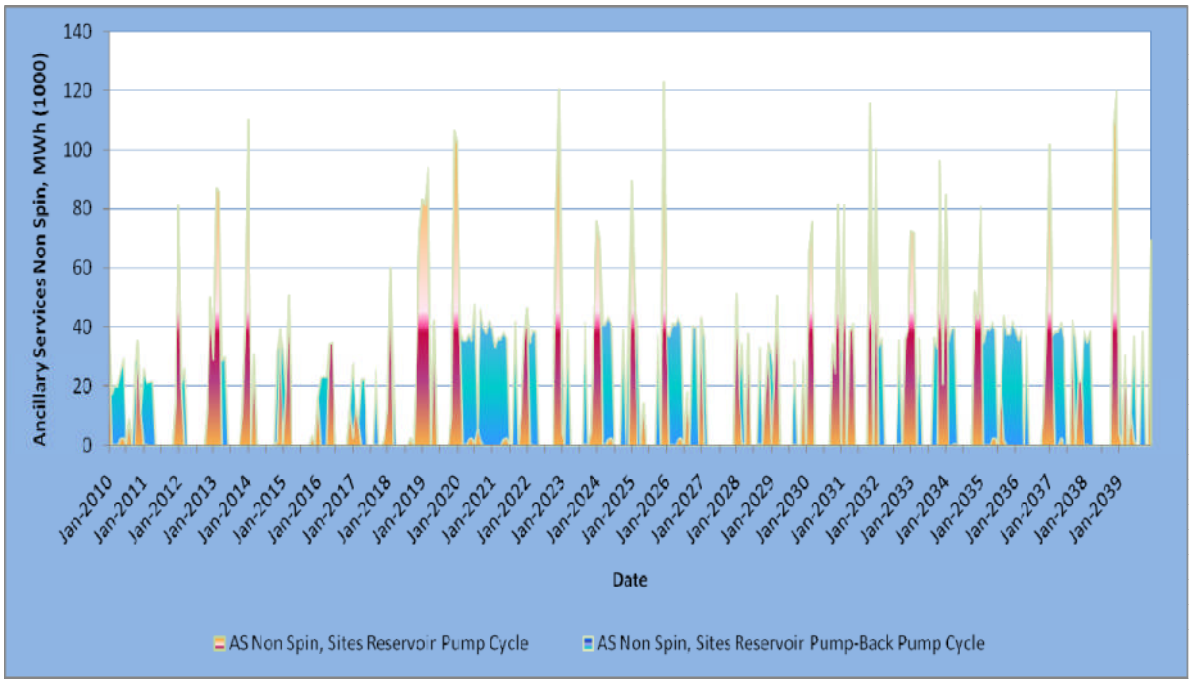

Figure 17- Ancillary Service Potential, Sites Reservoir Pumping Cycle, Median Case

For the generation cycle, the NODOS Project, will have the opportunity to sell Regulation Down AS (as described in #1 above) into the CAISO market. In this Study, the NODOS Project water release cycle is optimized to capture the most value of the associated energy (generation-cycle). Hence, water releases from Sites Reservoir are designed to occur in the On-Peak hours. Accordingly, the Project generation facilities are assumed to sell Regulation Down AS mostly in the On-Peak hours, and to a lesser extent in the Off-Peak hours. The assumption is that Regulation Down AS for the NODOS, if called upon, represents a temporary delay in water releases, and could be rectified within few hours. Also, it is assumed that the NODOS Project facilities will be equipped with AGC system and would be of the type that could be ramped down to satisfy CAISO requirements for this type of AS support. Participating in the Regulation Down AS market may result in foregoing some of the On-Peak generation revenues. More detailed analysis will be conducted in the next phase of the Study to estimate the value of lost opportunity, from shifting generation. Also, more information is needed on the frequency at which CAISO calls upon this type of AS support, so that it can be reflected in the analysis. The NODOS Project interconnection location to the CAISO grid would be an important factor in analyzing the Project's AS participation and value- a level of detail that is left to the next phase

of the Study. Figure-18 depicts the Regulation Down AS potential for the NODOS Project generation facilities in MWh.

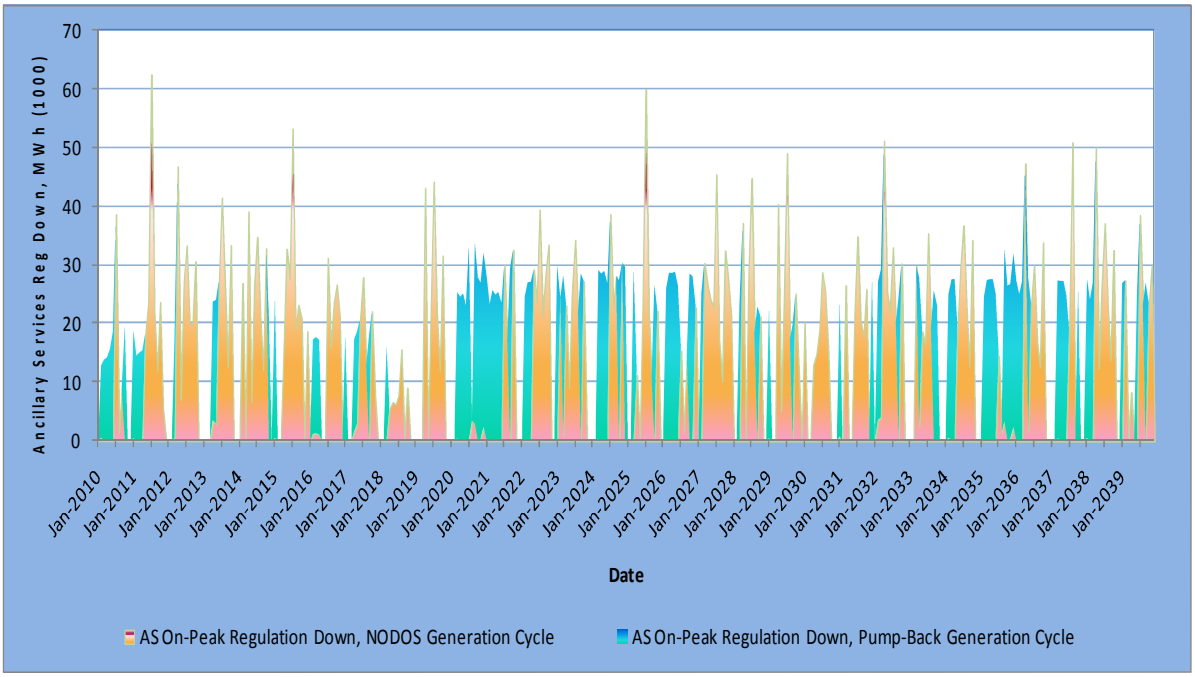

Figure 18- Ancillary Service Potential, NODOS Project Generation Cycle, Median Case

Figure-19 depicts the duration curves for the historical clearing prices for the AS markets currently trading in the CAISO day ahead market. The average values for Non Spin, Regulation Down On-Peak, and Regulation Down Off-Peak are calculated from the data sets used to generate Figure-19. Accordingly, a calculated, all hours, average value for Non Spin is $ 1.62 per MWh for the CAISO market. The duration curves for the Regulation Down AS based on On-Peak and Off-Peak clearing prices are shown in Figure-20, for the CAISO market. And, the calculated average values for the Regulation Down in the On-Peak and Off-Peak hours are $3.49 and $5.52 per MWh, respectively, for the CAISO market.

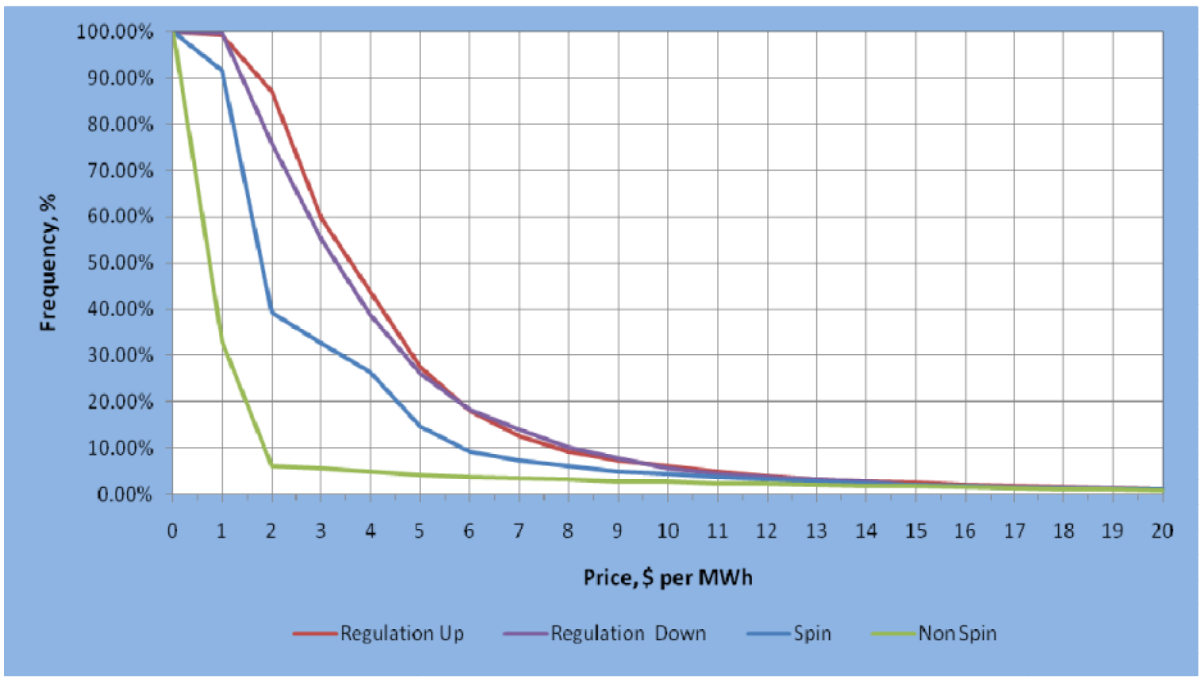

Figure 19- CAISO Markets, Ancillary Services Duration Curves, 06/01/2009 to 11/30/2009

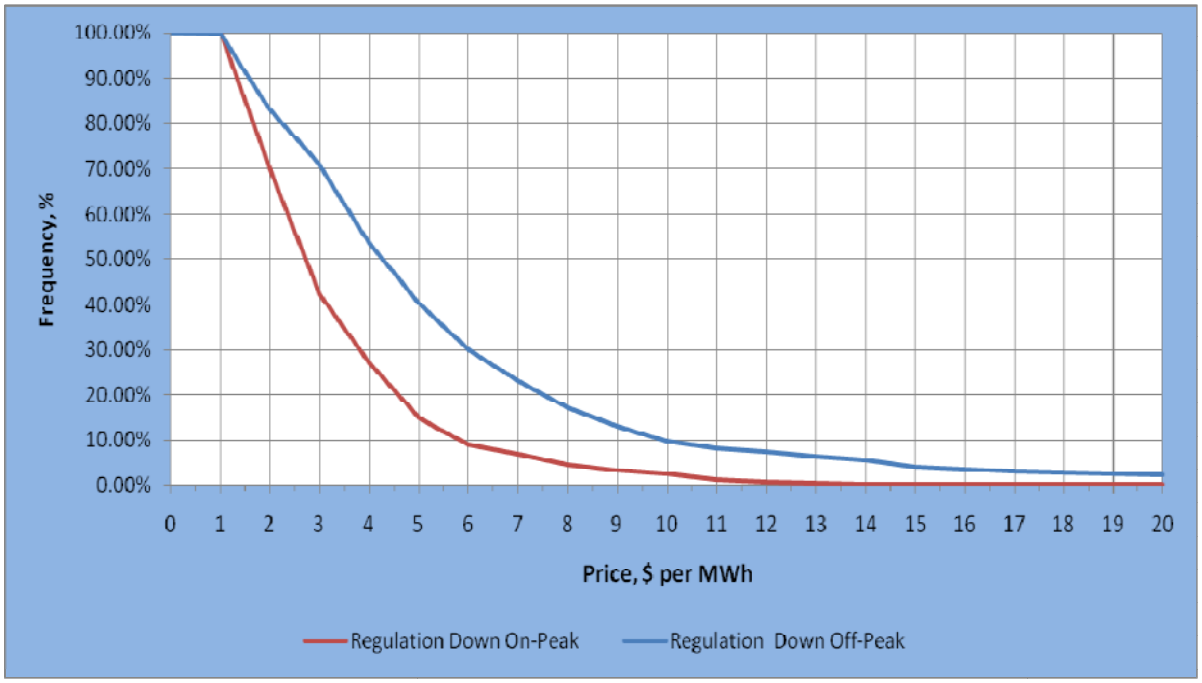

Figure 20- CAISO Market, Regulation Down Duration Curves, 06/01/2009 to 11/30/2009

For the NODOS Project, the total AS revenues in the Pump Cycle for the 30-year planning period in NPV is $3,757,000. The corresponding total AS revenues in the generation cycle for the Project in NPV is $7,817,000. The AS revenues from the Pump-Back operations in NPV are

$5,944,000. The NODOS Project total potential AS revenues in NPV is $17,518,000 for the 30-year planning period. The monthly cash flows for the Project's different AS revenue components in NPV are shown in Figure-21.

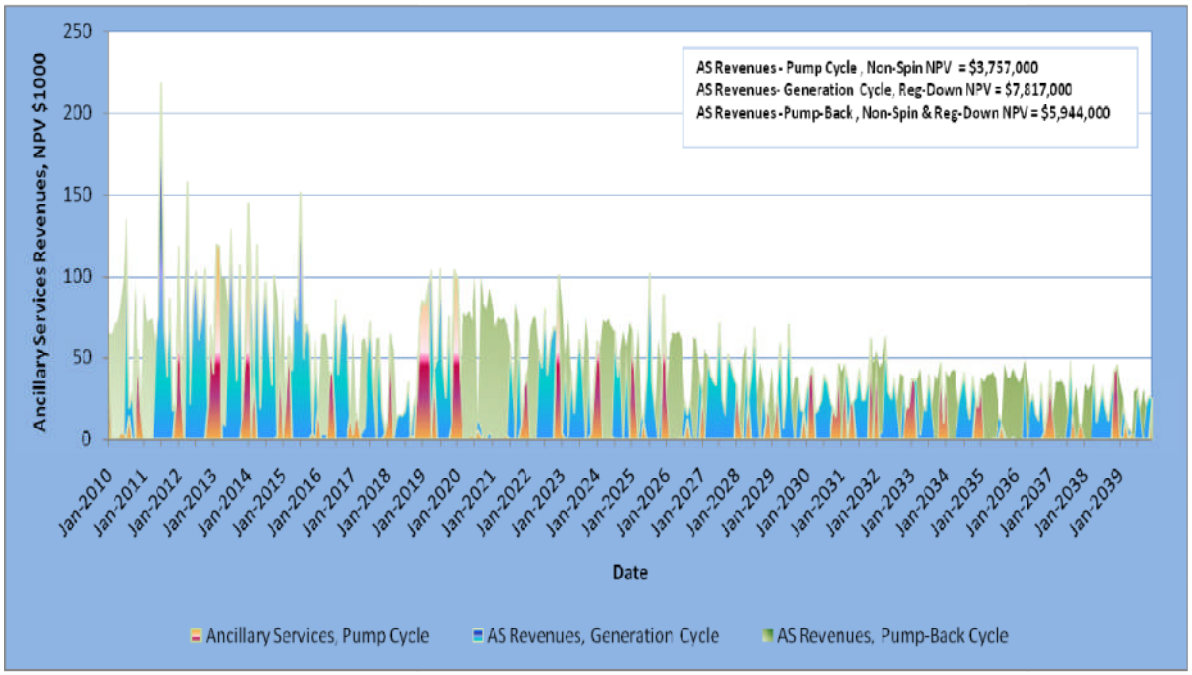

Figure 21- Ancillary Service Potential, Monthly NODOS Project Cash flows, Median Case

8-Recommendations and Next Steps

The current phase of the Power Planning Study of the NODOS Project is meant to provide a preliminary assessment of the designed Project components, and operational scenarios, from a power planning perspective. These scenarios are being used to formulate alternatives for the feasibility study of the Project. Power planning perspective is important in capturing the impacts of Energy market economies and regulatory mandates that will be consequential to the costs and revenues associated with the operations of the Project. Although, the NODOS Project is envisioned to provide off-stream storage needed to support the State Water Project and the Central Valley Project operations, its power portfolio is a major component in determining the Project's ultimate viability. More work is needed to improve on the findings of the current phase of the study,

- Use anticipated CALSIM modeling results (reflecting latest B.O.) for the daily operations to refine the Base, High, and Low Cases of operations of the NODOS Project.
- Model different operational scenarios for the NODOS Project and its power complex, to include Pump-Back operations (a daily cycle for the residual Project capacity from the seasonal cycle), and Pure Pump-Storage Operations (an independent component dedicated for a daily pumping/generating cycle).

- Use available market information (i.e. LMP prices and trends) to optimize the NODOS Project operations. Update the AS duration curves to reflect CAISO locational markets that pertain to the Project.
- Explore and propose modifications to the physical and operational attributes of the power generation complex in light of the modeling results. Consider the change in designed capacities needed to correspond to the optimized operations, and needed Project flexibilities.
- Identify operational scenarios and design modifications that could be modeled to optimize Project's operations and to enhance its value.
- Propose a sensitivity analysis process that would describe the impact of adjusting design parameters, operational and financial uncertainty, on the Project's value.
- Look into trends in technologies and setups that represent current practice in designing hydropower Projects. Many recently designed pump-storage facilities are using separate pumping and generating facilities to increase efficiency and add operational flexibility.
- Consider a 50-year planning period that is more consistent with the life cycle of hydropower Project components.

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Appendix A- Transmission Interconnection Roadmap

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Transmission Interconnection Process

PARO's Transmission Planning Branch Prepared a description of the normal process that DWR has taken when exploring transmission interconnection options for new or existing facilities. The discussion below should serve as a roadmap for the transmission interconnection process for the NODOS Project.

Preliminary Details

Before the Power and Risk Office (PARO) can initiate its actions for obtaining physical interconnection and transmission service for DWR facilities, the following need to be ascertained:

1. Estimated peak capacity needs (MWs) at facilities' start-up and during construction
2. Planned load growth for future enlargements at said facilities
3. Probable location of "Point of Interconnection" to high-voltage system
4. Identification of all potential transmission providers

Transmission Provider Studies

All of the major transmission service providers in California require that they conduct various engineering studies which evaluate the impact of a proposed facility on the overall high-voltage system. These studies, usually known as "System Impact Studies" (SIS), are of value to DWR for two reasons. First, the reports resulting from these studies can be utilized in any EIR/EIS documentation for discussion of transmission impacts (i.e., line routing and substations). Second, the studies, a necessary first level of review required by any of the potential transmission service providers, give a good indication of which provider represents the preferred option. However, it must be noted that any cost estimates provided at the SIS stage are considered preliminary and non-binding.

Once DWR has reviewed the various SIS reports and validated their findings, DWR must initiate the second stage of the transmission planning studies (typically called a Facility Study). These studies build upon the SIS and identify specific hardware that will be needed to implement the transmission service interconnection. Typically, one can assume that the Facility Study will provide accurate cost estimates that could be used in determining the economics of the project.

Transmission Service Request

Once the results of the various studies (i.e., SIS and Facility Study) are compiled, DWR can now determine which provider it will seek an interconnection with, and subsequent transmission service. Typically, DWR will need to arrange for an interconnection service agreement and a transmission service agreement.

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Route & Construction

Once DWR completes the transmission interconnection agreements, actual construction-related activities begin. These activities include: ordering & receiving equipment, land acquisition and permitting, and actual construction.

It is important to note that there must be adequate lead time for all of the activities described above before the new DWR facility is expected to be on-line. To illustrate this, Table A-1 represents a typical timeline.

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TABLE A-1 – A TYPICAL TIMELINE FOR NEW TRANSMISSION INTERCONNECTION

Phase	Action	PARO's Role	Duration
Preliminary Details			
	Assessing Project Needs (e.g., location and loads)	Support DWR's project team where necessary	(unknown, but for purposes of this timeline, completion of Preliminary Details is T_0)
Transmission Provider Studies			
	Coordination with Transmission Providers	Prepare necessary letters and documentation. Facilitate groundwork discussions between DWR and Providers	2 months
	Formal Studies (System Impact Studies & Facility Studies)	Prepare necessary documentation. Negotiate study agreements. Facilitate payments for studies. Monitor process. Assist DOE-Electrical Engineering in reviewing results. Submit recommendations to Management for which transmission option is preferable.	Up to 2 years
Transmission Service Requests			
	Formal Request to Preferred Transmission Provider	Prepare necessary documentation for request. Negotiate transmission interconnection agreement. Negotiate transmission service agreement. Facilitate upfront payments as required by agreements.	1 year
Construction Phase			
	DWR to order required hardware for its side of interconnection and for Provider to order hardware for their side.	Assist DWR project team and DOE-Electrical Engineering as necessary	3 years
	Install DWR's hardware & Provider installs on their side of interconnection, per agreements	Assist DWR project team and DOE-Electrical Engineering as necessary	2 years
On-line Date **** Assuming no major obstacles to Timeline ****			8 years after Preliminary project Details complete

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Appendix B- High and Low Cases NODOS Project Power Operations

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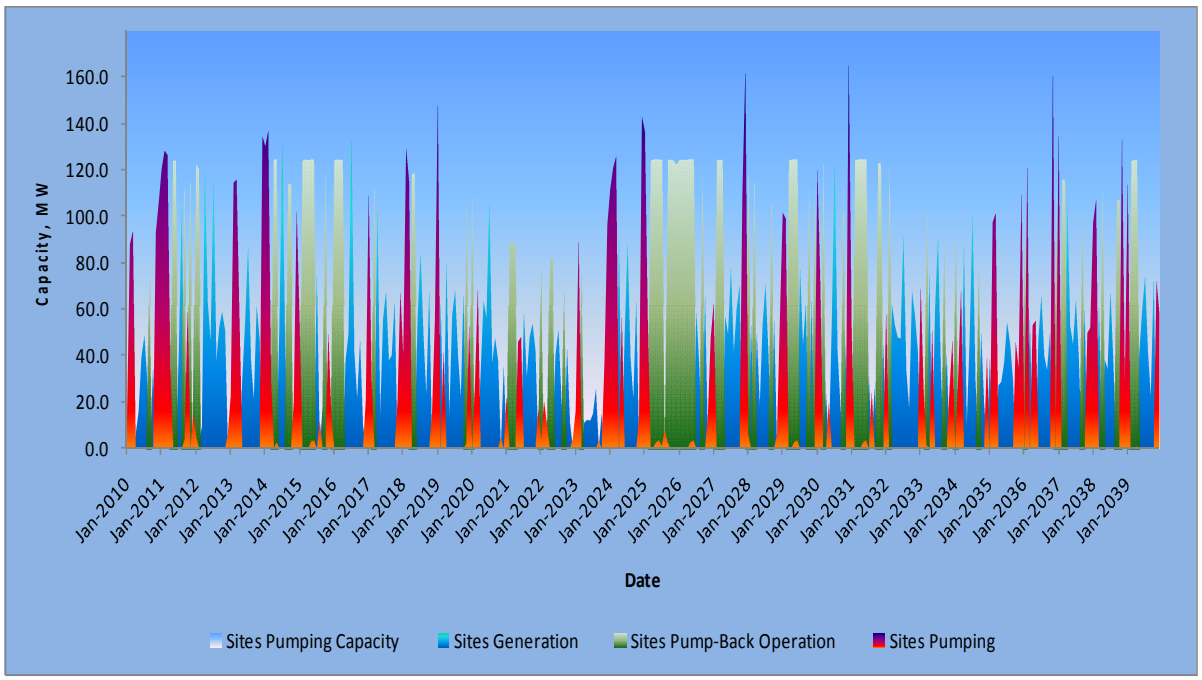

Figure B1- NODOS Project, Sites Reservoir Operations- High Case

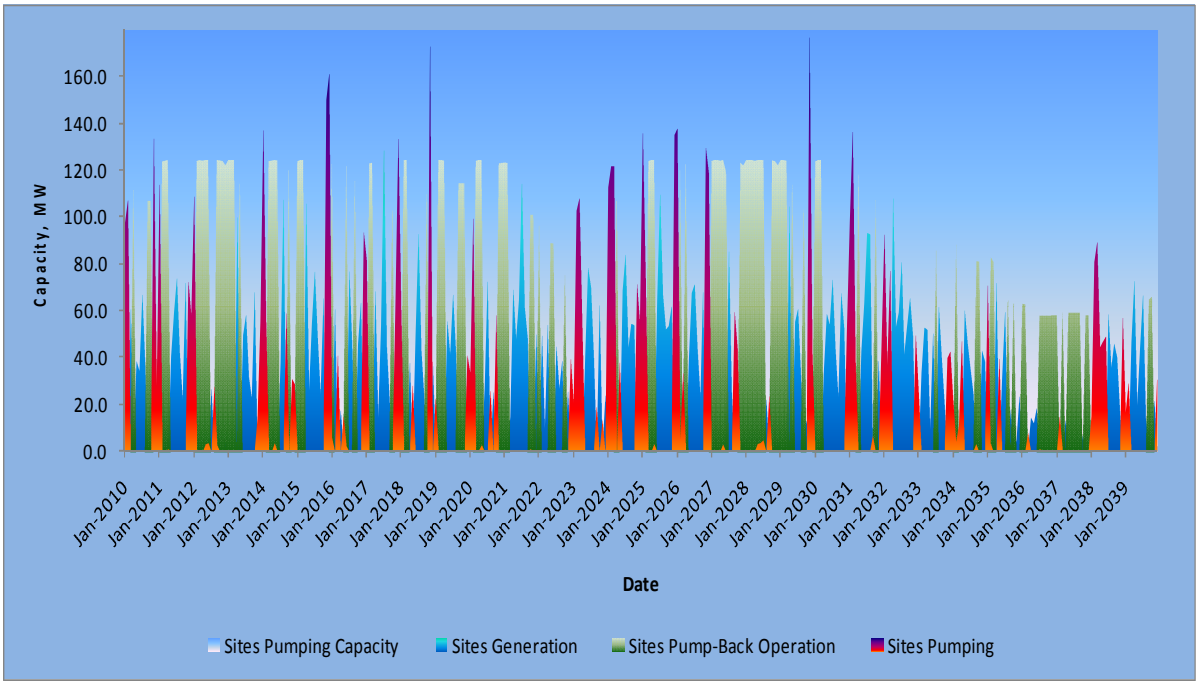

Figure B2- NODOS Project, Sites Reservoir Operations- Low Case

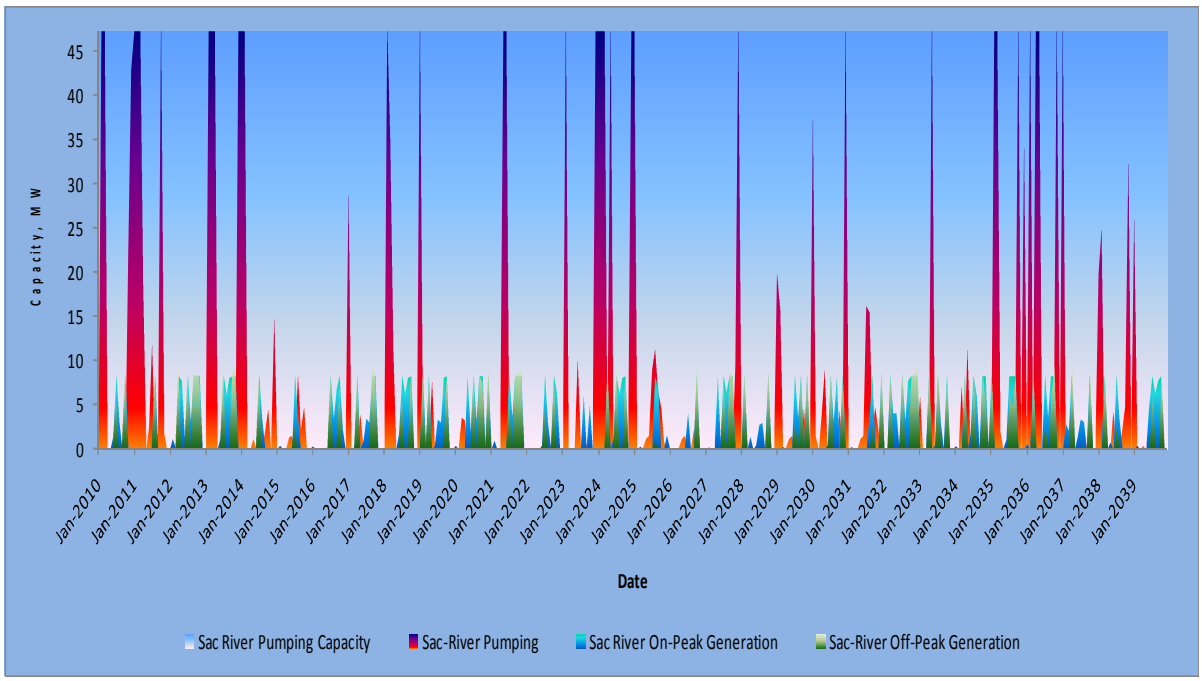

Figure B3- NODOS Project, Sacramento River Pumping Plant Operations- High Case

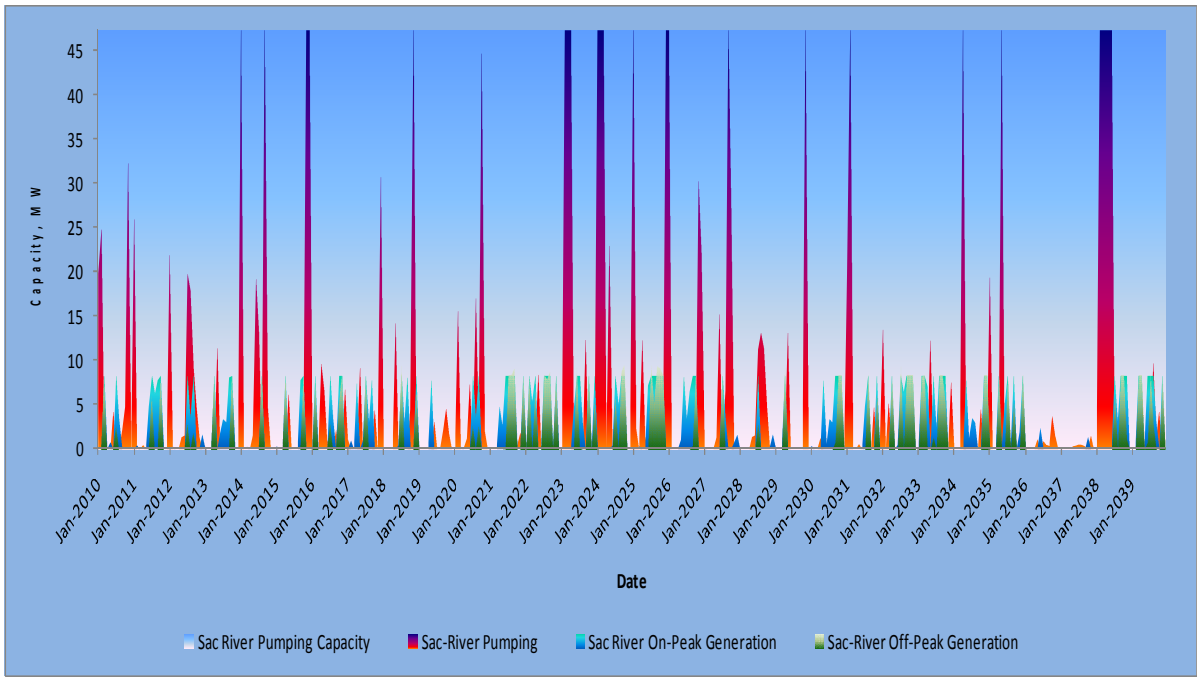

Figure B4- NODOS Project, Sacramento River Pumping Plant Operations- Low Case

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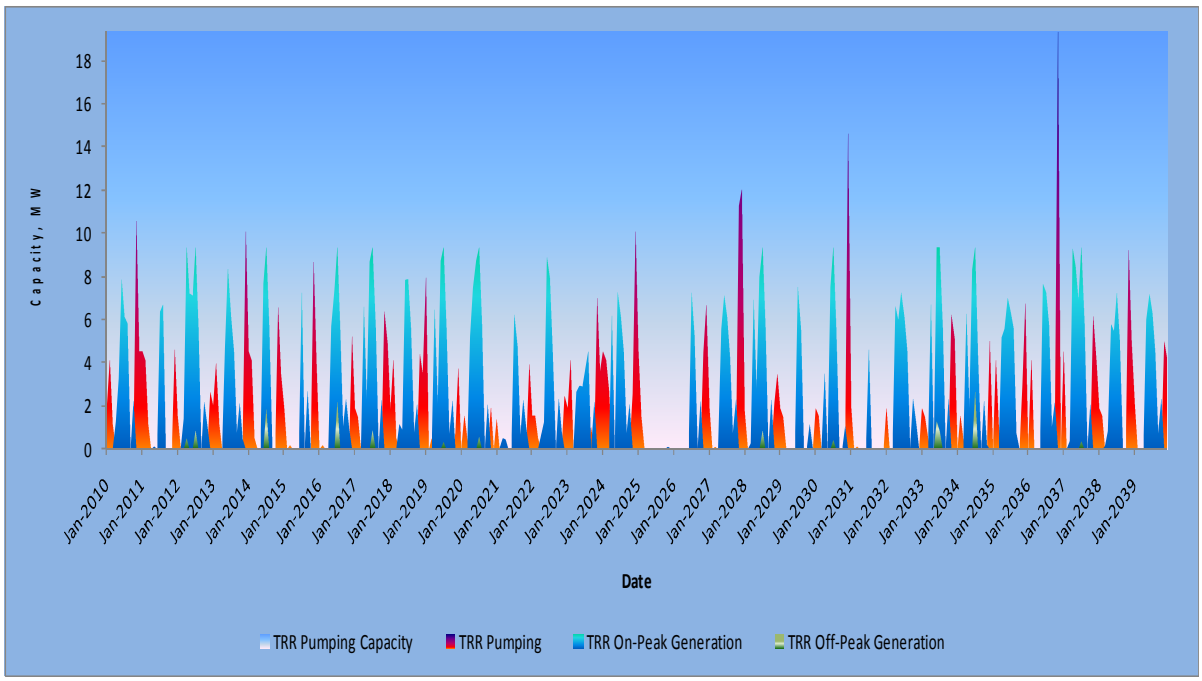

Figure B5- NODOS Project, TRR Pumping Plant Operations- High Case

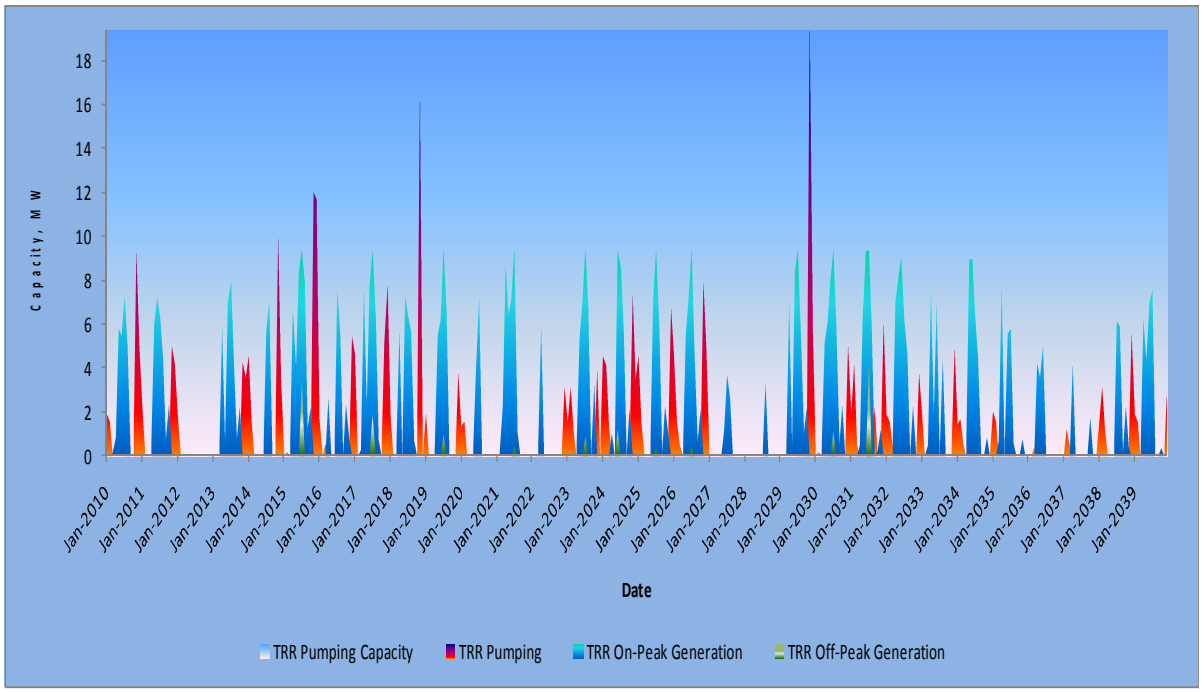

Figure B6- NODOS Project, TRR Pumping Plant Operations- Low Case

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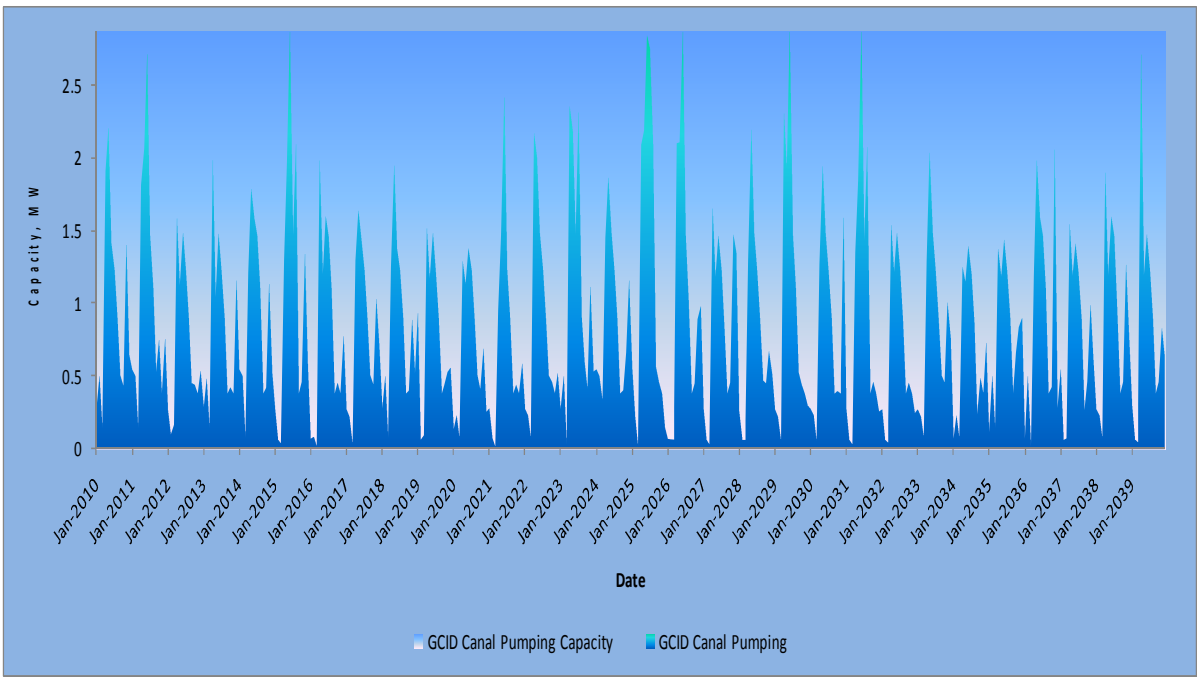

Figure B7- NODOS Project, GCID Canal Pumping Plant Operations- High Case

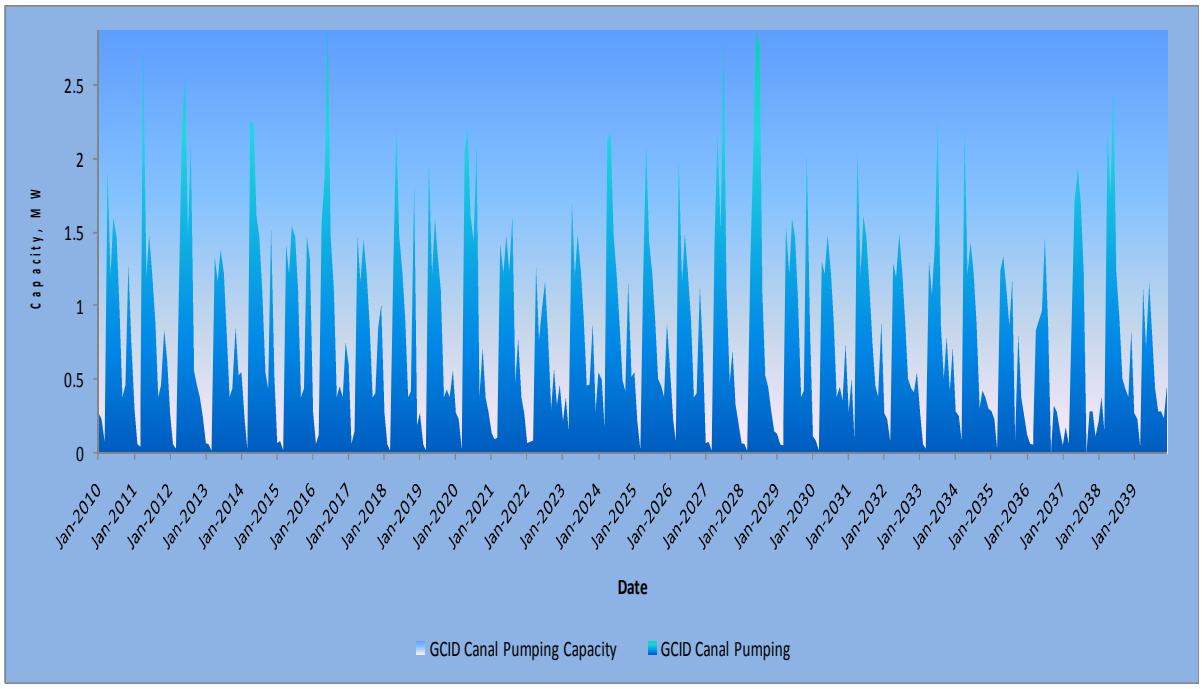

Figure B8- NODOS Project, GCID Canal Pumping Plant Operations- Low Case

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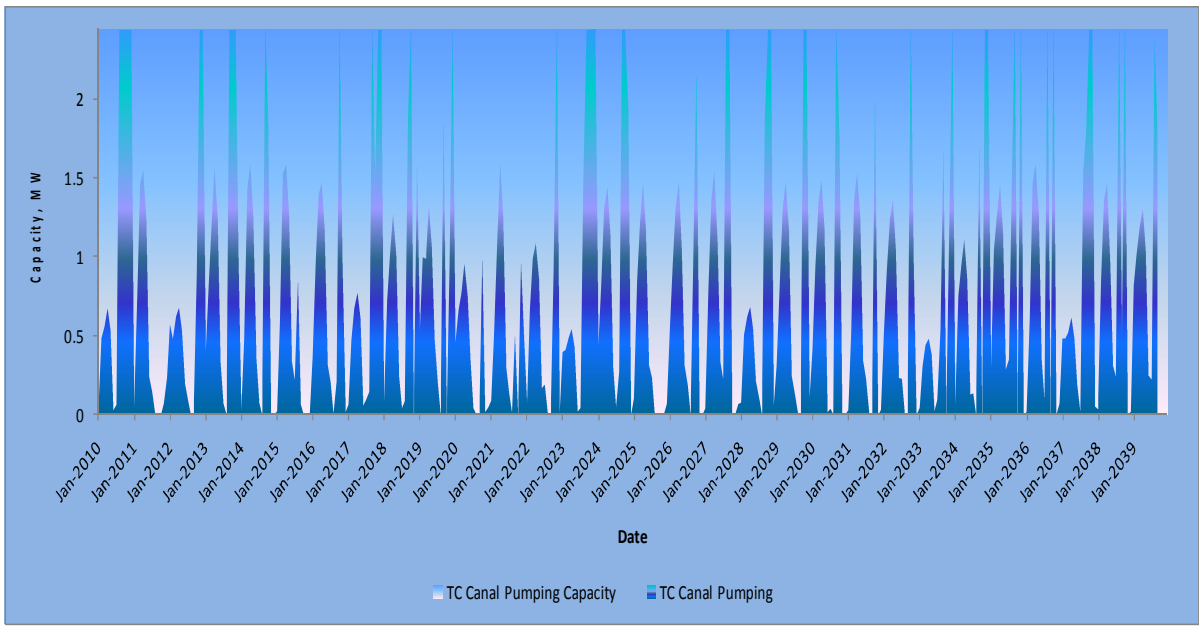

Figure B9- NODOS Project, TC Canal Pumping Plant Operations- High Case

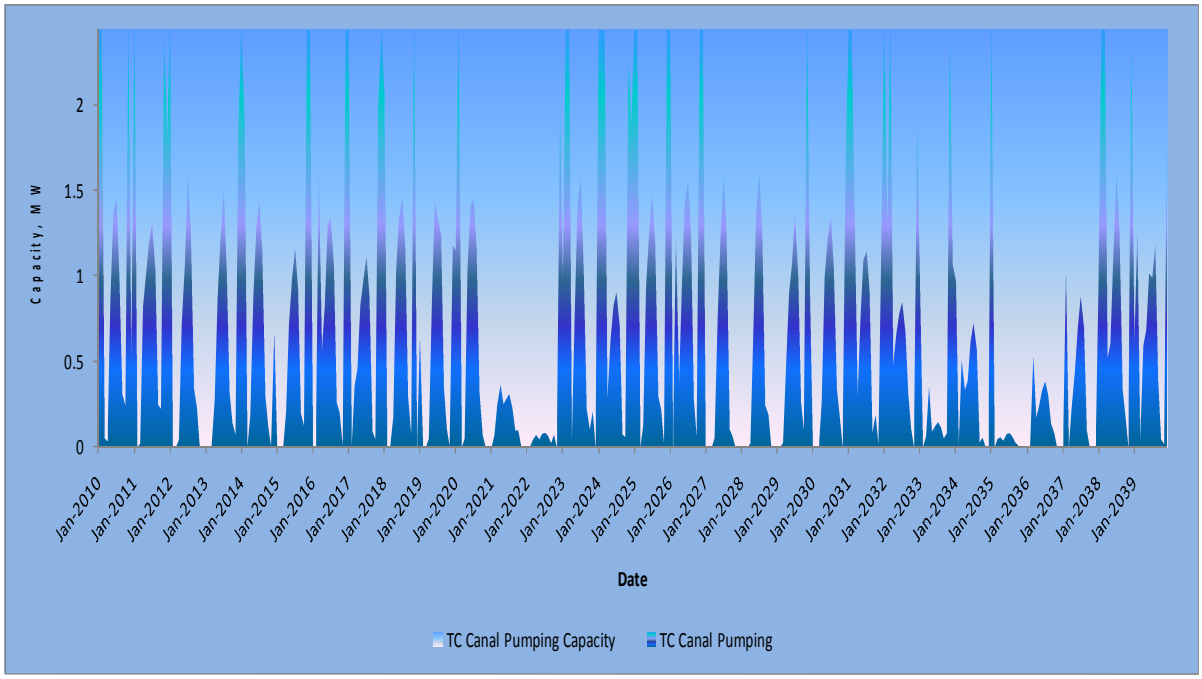

Figure B10- NODOS Project, TC Canal Pumping Plant Operations- Low Case

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Table B1- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

Plant Mode	Pumping , MW					Generation, MW					
Plant Name	TRR	Sac River	TC Canal	GCID Canal	Sites	TRR		Sac River		Sites	Pump Back
Installed Capacity, MW	19.36	47.53	2.44	2.87	179.70	9.33		8.27		123.98	123.98
Installed Capacity, cfs	1800	2000	2121	3000	5900	1500		1500		5100	5100
Date	All Hours					On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	On-Peak
Jan-2010	2.02	0.00	0.79	0.29	14.73	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2010	4.15	47.53	2.44	0.50	88.14	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2010	1.17	47.53	2.44	0.14	93.62	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2010	0.00	0.00	0.05	1.91	0.00	1.28	0.00	0.00	0.00	6.29	0.00
May-2010	0.00	0.00	0.49	2.21	0.00	3.28	0.00	0.00	0.00	15.84	0.00
Jun-2010	0.00	0.00	0.56	1.42	0.00	7.85	0.00	1.42	0.00	39.38	0.00
Jul-2010	0.00	0.00	0.67	1.23	0.00	6.13	0.00	8.27	5.87	48.44	0.00
Aug-2010	0.00	0.00	0.54	0.91	0.00	5.82	0.00	3.12	0.00	28.87	0.00
Sep-2010	0.00	0.65	0.03	0.51	0.93	0.00	0.00	0.00	0.00	0.00	75.57
Oct-2010	0.00	0.00	0.07	0.43	0.00	2.25	0.00	8.27	8.24	34.10	0.00
Nov-2010	10.59	22.74	2.44	1.41	93.18	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2010	4.56	43.06	2.44	0.65	106.12	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2011	4.55	47.53	2.44	0.55	120.32	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2011	4.15	47.53	2.44	0.50	128.36	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2011	1.17	47.53	2.44	0.14	126.63	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2011	0.00	18.69	0.05	1.82	34.40	0.00	0.00	0.00	0.00	0.00	0.00
May-2011	0.00	0.00	0.75	2.07	0.00	0.14	0.00	0.00	0.00	0.92	123.30
Jun-2011	0.00	2.55	1.46	2.72	0.00	0.00	0.00	0.00	0.00	0.01	123.62
Jul-2011	0.00	11.81	1.55	1.47	0.00	6.36	0.00	0.00	0.00	42.88	0.00
Aug-2011	0.00	0.00	1.24	1.11	0.00	6.68	0.00	8.27	8.27	102.98	0.00
Sep-2011	0.01	1.86	0.24	0.53	4.10	0.00	0.00	0.00	0.00	0.00	117.22
Oct-2011	0.00	47.53	0.15	0.75	58.91	0.00	0.00	0.00	0.00	0.00	0.00
Nov-2011	0.00	1.80	0.00	0.38	0.00	0.06	0.00	0.00	0.00	0.36	120.51
Dec-2011	4.64	0.00	0.00	0.76	15.13	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2012	1.55	0.00	0.00	0.27	5.14	0.00	0.00	0.00	0.00	0.00	121.98
Feb-2012	0.01	0.00	0.07	0.10	0.00	0.09	0.00	1.17	0.00	3.27	119.94
Mar-2012	0.01	0.00	0.24	0.17	0.00	1.41	0.00	0.00	0.00	9.37	0.00
Apr-2012	0.00	0.00	0.57	1.59	0.00	9.33	0.50	8.27	9.39	117.91	0.00
May-2012	0.00	0.00	0.48	1.12	0.00	7.20	0.00	7.75	0.00	62.91	0.00
Jun-2012	0.00	0.00	0.62	1.49	0.00	7.10	0.00	0.78	0.00	45.52	0.00
Jul-2012	0.00	0.00	0.68	1.23	0.00	9.33	0.87	8.27	8.27	114.16	0.00
Aug-2012	0.00	0.00	0.54	0.90	0.00	5.66	0.00	3.00	0.00	37.51	0.00
Sep-2012	0.01	0.00	0.20	0.46	0.00	0.00	0.00	8.27	8.27	52.14	0.00
Oct-2012	0.00	0.00	0.10	0.44	0.00	2.19	0.00	8.27	8.27	58.71	0.00
Nov-2012	0.00	0.00	0.01	0.38	0.00	1.07	0.00	8.27	8.27	50.94	0.00
Dec-2012	2.66	0.00	0.00	0.54	6.51	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2013	2.02	0.00	0.90	0.29	22.65	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2013	4.00	47.53	2.44	0.49	114.68	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2013	1.17	47.53	2.44	0.14	115.94	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2013	0.01	47.53	0.40	1.99	56.44	0.00	0.00	0.00	0.00	0.00	0.00
May-2013	0.00	0.00	0.81	1.04	0.00	4.71	0.00	0.00	0.00	29.54	0.00
Jun-2013	0.00	0.00	1.20	1.48	0.00	8.34	0.00	1.25	0.00	54.52	0.00
Jul-2013	0.00	0.00	1.56	1.23	0.00	6.13	0.00	8.27	9.03	86.46	0.00
Aug-2013	0.00	0.00	1.24	0.90	0.00	4.51	0.00	6.19	0.00	38.01	0.00
Sep-2013	0.00	0.00	0.33	0.38	0.00	0.76	0.00	8.10	0.00	20.49	0.00
Oct-2013	0.00	0.00	0.07	0.43	0.00	2.14	0.00	8.27	8.27	61.00	0.00
Nov-2013	0.00	0.00	0.00	0.38	0.00	0.49	0.00	8.27	9.17	46.90	0.00

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Table B1 (Cont.)- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

Dec-2013	10.10	47.53	2.44	1.16	134.50	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2014	4.55	47.53	2.44	0.55	130.18	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2014	4.15	47.53	2.44	0.50	136.82	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2014	0.54	0.00	1.00	0.08	27.93	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2014	0.00	0.00	0.03	1.21	0.00	0.00	0.00	0.00	0.00	0.00	123.98
May-2014	0.01	1.19	0.48	1.79	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2014	0.00	0.00	1.43	1.59	0.00	7.64	0.00	0.00	0.00	51.98	0.00
Jul-2014	0.00	0.00	1.58	1.47	0.00	9.33	1.85	8.27	8.27	129.84	0.00
Aug-2014	0.00	0.00	1.26	1.11	0.00	5.75	0.00	3.52	0.00	43.70	0.00
Sep-2014	0.00	2.17	0.35	0.38	0.00	0.02	0.00	0.00	0.00	0.12	113.47
Oct-2014	0.00	4.49	0.08	0.42	0.00	0.03	0.00	0.00	0.00	0.17	113.39
Nov-2014	6.60	0.00	0.00	1.14	20.03	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2014	3.49	14.75	2.44	0.52	102.00	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2015	1.91	0.00	1.84	0.28	54.39	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2015	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.42	0.00	1.05	123.36
Mar-2015	0.20	0.00	0.00	0.04	0.67	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2015	0.00	0.00	0.02	1.30	0.00	0.07	0.00	0.00	0.00	0.46	123.71
May-2015	0.01	1.32	0.61	1.98	3.09	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2015	0.00	1.54	1.53	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2015	0.00	0.00	1.58	1.47	0.00	7.24	0.00	8.27	2.65	73.96	0.00
Aug-2015	0.01	8.31	1.26	2.10	11.96	0.00	0.00	3.59	0.00	0.00	0.00
Sep-2015	0.00	2.11	0.34	0.38	0.00	2.69	0.00	0.00	0.00	17.72	0.00
Oct-2015	0.00	4.71	0.22	0.46	0.00	0.03	0.00	0.00	0.00	0.18	120.30
Nov-2015	8.70	0.00	0.84	1.35	49.47	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2015	3.97	0.00	0.06	0.59	14.95	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2016	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.34	0.00	0.86	123.48
Feb-2016	0.20	0.00	0.00	0.09	0.66	0.00	0.00	0.00	0.00	0.00	123.98
Mar-2016	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2016	0.01	0.01	0.37	1.99	0.00	0.05	0.00	0.00	0.00	0.32	123.79
May-2016	0.00	0.00	0.99	1.20	0.00	5.68	0.00	0.00	0.00	38.39	0.00
Jun-2016	0.00	0.00	1.40	1.60	0.00	7.35	0.00	0.00	0.00	49.31	0.00
Jul-2016	0.00	0.00	1.47	1.47	0.00	9.33	2.18	8.27	8.27	132.52	0.00
Aug-2016	0.00	0.00	1.18	1.11	0.00	5.54	0.00	3.38	0.00	41.38	0.00
Sep-2016	0.00	0.00	0.32	0.38	0.00	1.07	0.00	6.81	0.00	21.10	0.00
Oct-2016	0.00	0.00	0.20	0.46	0.00	2.32	0.00	8.27	6.70	46.38	0.00
Nov-2016	0.00	0.00	0.00	0.38	0.00	0.96	0.00	2.22	0.00	10.18	0.00
Dec-2016	5.24	0.00	0.22	0.78	20.26	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2017	1.91	28.79	2.44	0.28	109.13	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2017	1.52	0.00	0.96	0.23	28.88	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2017	0.00	0.00	0.02	0.03	0.00	0.06	0.00	0.28	0.00	1.02	117.73
Apr-2017	0.00	0.00	0.07	1.30	0.00	6.60	0.00	8.27	8.27	102.09	0.00
May-2017	0.00	3.90	0.47	1.64	0.00	2.28	0.00	0.00	0.00	14.08	0.00
Jun-2017	0.00	0.00	0.68	1.45	0.00	8.66	0.00	0.96	0.00	55.56	0.00
Jul-2017	0.00	0.00	0.77	1.23	0.00	9.33	0.87	3.51	0.00	67.27	0.00
Aug-2017	0.00	0.00	0.62	0.91	0.00	5.64	0.00	3.00	0.00	38.04	0.00
Sep-2017	0.01	0.00	0.06	0.51	0.00	0.00	0.00	8.27	9.31	40.01	0.00
Oct-2017	0.00	0.00	0.10	0.45	0.00	2.29	0.00	8.27	8.27	62.73	0.00
Nov-2017	6.40	0.00	0.15	1.03	19.65	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2017	4.93	0.00	2.44	0.73	67.27	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2018	1.85	0.00	1.50	0.28	39.35	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2018	4.15	47.53	2.44	0.50	129.17	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2018	0.54	35.25	2.44	0.08	115.46	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2018	0.00	11.06	0.08	1.25	0.00	1.17	0.00	0.00	0.00	7.80	117.74

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Table B1 (Cont.)- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

May-2018	0.01	0.00	0.73	1.95	0.00	0.89	0.00	0.00	0.00	5.93	118.24
Jun-2018	0.00	0.00	1.02	1.38	0.00	7.82	0.00	1.74	0.00	56.05	0.00
Jul-2018	0.00	0.00	1.27	1.23	0.00	7.86	0.00	8.27	5.98	83.26	0.00
Aug-2018	0.00	0.00	1.01	0.91	0.00	5.64	0.00	6.21	0.00	48.64	0.00
Sep-2018	0.00	0.00	0.24	0.38	0.00	0.78	0.00	8.10	0.00	22.50	0.00
Oct-2018	0.00	0.00	0.04	0.40	0.00	2.08	0.00	8.27	8.27	66.94	0.00
Nov-2018	4.43	0.00	0.09	0.89	14.97	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2018	3.49	0.00	1.87	0.52	55.16	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2019	7.97	47.53	2.44	0.94	147.85	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2019	0.00	0.00	0.00	0.07	0.00	0.01	0.00	8.27	8.27	61.90	0.00
Mar-2019	0.51	0.00	1.57	0.10	41.51	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2019	0.00	0.00	0.53	1.52	0.00	6.46	0.00	8.27	7.29	79.33	0.00
May-2019	0.00	7.68	1.00	1.17	0.00	2.09	0.00	0.00	0.00	13.47	0.00
Jun-2019	0.00	0.00	0.99	1.49	0.00	8.71	0.00	0.43	0.00	57.32	0.00
Jul-2019	0.00	0.00	1.32	1.22	0.00	9.33	0.35	3.38	0.00	67.79	0.00
Aug-2019	0.00	0.00	1.07	0.90	0.00	5.64	0.00	3.00	0.00	40.18	0.00
Sep-2019	0.00	0.00	0.47	0.38	0.00	0.72	0.00	8.10	0.00	21.46	0.00
Oct-2019	0.00	0.00	0.20	0.45	0.00	2.25	0.00	8.27	8.27	65.53	0.00
Nov-2019	0.75	0.00	0.00	0.53	2.12	0.00	0.00	0.00	0.00	0.00	103.90
Dec-2019	3.76	0.00	1.84	0.56	52.96	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2020	0.00	0.00	0.00	0.14	0.00	0.01	0.00	0.43	0.00	0.94	107.80
Feb-2020	1.57	0.00	0.96	0.23	26.90	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2020	0.54	3.56	2.44	0.08	68.29	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2020	0.00	3.27	0.46	1.29	0.00	5.23	0.00	0.00	0.00	32.71	0.00
May-2020	0.00	0.00	0.66	1.13	0.00	7.47	0.00	8.05	0.00	63.24	0.00
Jun-2020	0.00	0.00	0.77	1.38	0.00	8.72	0.00	1.75	0.00	55.96	0.00
Jul-2020	0.00	0.00	0.95	1.23	0.00	9.33	0.59	8.27	8.27	105.56	0.00
Aug-2020	0.00	0.00	0.76	0.90	0.00	5.81	0.00	3.11	0.00	36.68	0.00
Sep-2020	0.01	0.00	0.35	0.51	0.00	0.00	0.00	8.27	8.27	47.51	0.00
Oct-2020	0.00	0.00	0.04	0.41	0.00	2.07	0.00	8.27	7.38	38.08	0.00
Nov-2020	1.94	0.00	0.00	0.69	4.76	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2020	0.00	0.00	0.00	0.26	0.00	0.00	0.00	8.27	9.37	35.16	0.00
Jan-2021	1.40	0.00	0.98	0.28	21.94	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2021	0.01	0.00	0.02	0.08	0.00	0.06	0.00	1.01	0.00	2.01	88.51
Mar-2021	0.00	0.00	0.05	0.02	0.00	0.53	0.00	0.00	0.00	2.57	87.92
Apr-2021	0.00	0.00	0.09	0.95	0.00	0.46	0.00	0.00	0.00	2.23	87.93
May-2021	0.01	47.53	0.52	1.47	46.05	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2021	0.01	47.53	1.10	2.42	48.23	0.00	0.00	0.00	0.00	0.00	0.00
Jul-2021	0.00	0.00	1.58	1.23	0.00	6.23	0.00	8.27	5.87	58.08	0.00
Aug-2021	0.00	0.00	1.26	0.91	0.00	4.78	0.00	3.58	0.00	30.24	0.00
Sep-2021	0.00	0.00	0.30	0.38	0.00	0.68	0.00	8.27	8.27	47.82	0.00
Oct-2021	0.00	0.00	0.14	0.44	0.00	2.28	0.00	8.27	8.27	53.60	0.00
Nov-2021	0.00	0.00	0.01	0.38	0.00	1.03	0.00	8.27	8.95	42.09	0.00
Dec-2021	3.95	0.00	0.50	0.59	17.03	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2022	1.57	0.00	0.00	0.28	3.47	0.00	0.00	0.00	0.00	0.00	80.74
Feb-2022	1.57	0.00	0.96	0.23	20.37	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2022	0.54	0.00	0.51	0.08	10.35	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2022	0.00	0.00	0.07	2.17	0.00	0.68	0.00	0.10	0.00	3.29	82.49
May-2022	0.01	0.01	0.67	2.01	0.00	1.27	0.00	0.00	0.00	5.79	80.48
Jun-2022	0.00	0.00	0.99	1.49	0.00	8.87	0.00	0.46	0.00	40.47	0.00
Jul-2022	0.00	0.00	1.09	1.23	0.00	7.94	0.00	8.27	4.45	50.89	0.00
Aug-2022	0.00	0.00	0.86	0.90	0.00	4.50	0.00	3.00	0.00	21.53	0.00
Sep-2022	0.01	0.46	0.17	0.51	0.61	0.00	0.00	0.00	0.00	0.00	70.44

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Table B1 (Cont.)- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

Oct-2022	0.00	0.00	0.19	0.46	0.00	2.35	0.00	8.27	8.27	42.61	0.00
Nov-2022	0.00	0.00	0.00	0.38	0.00	0.83	0.00	6.49	0.00	10.87	0.00
Dec-2022	2.49	0.00	0.00	0.52	4.35	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2023	1.91	0.00	0.91	0.28	16.49	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2023	4.15	47.53	2.44	0.50	89.31	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2023	0.00	0.00	0.01	0.03	0.00	0.06	0.00	0.00	0.00	0.27	79.38
Apr-2023	0.00	0.00	0.40	2.36	0.00	2.65	0.00	0.00	0.00	11.37	0.00
May-2023	0.01	0.01	0.41	2.19	0.00	2.95	0.00	0.00	0.00	12.46	0.00
Jun-2023	0.00	9.98	0.49	1.47	0.00	2.91	0.00	0.00	0.00	12.02	0.00
Jul-2023	0.01	0.48	0.54	2.32	0.00	3.72	0.00	0.00	0.00	15.00	0.00
Aug-2023	0.00	0.00	0.43	0.91	0.00	4.52	0.00	6.03	0.00	25.65	0.00
Sep-2023	1.03	0.53	0.02	0.60	3.67	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2023	0.00	0.00	0.05	0.41	0.00	2.20	0.00	4.93	0.00	14.75	0.00
Nov-2023	7.02	0.00	1.51	1.12	37.59	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2023	3.62	47.53	2.44	0.53	96.76	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2024	4.55	47.53	2.44	0.55	111.87	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2024	4.15	47.53	2.44	0.50	120.98	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2024	2.74	47.53	2.46	0.34	125.85	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2024	0.00	0.00	0.44	1.45	0.00	6.19	0.00	8.27	9.40	89.26	0.00
May-2024	0.01	47.53	0.83	1.87	56.75	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2024	0.00	0.00	1.31	1.49	0.00	7.25	0.00	1.20	0.00	48.52	0.00
Jul-2024	0.00	0.00	1.44	1.23	0.00	6.13	0.00	8.27	9.18	87.86	0.00
Aug-2024	0.00	0.00	1.15	0.90	0.00	4.51	0.00	6.24	0.00	39.24	0.00
Sep-2024	0.00	0.00	0.30	0.38	0.00	0.76	0.00	8.10	0.00	21.08	0.00
Oct-2024	0.00	0.00	0.05	0.41	0.00	2.09	0.00	8.27	8.27	62.78	0.00
Nov-2024	2.57	0.00	0.28	0.66	13.04	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2024	10.10	47.53	2.44	1.16	143.01	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2025	4.55	47.53	2.44	0.55	136.67	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2025	1.52	0.00	1.94	0.23	55.74	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2025	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.33	0.00	0.80	123.52
Apr-2025	0.01	0.24	0.11	2.09	0.57	0.00	0.00	0.00	0.00	0.00	123.98
May-2025	0.01	1.19	0.85	2.19	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2025	0.01	1.54	1.21	2.85	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2025	0.01	9.10	1.46	2.76	0.97	0.00	0.00	0.00	0.00	0.00	123.78
Aug-2025	0.01	11.28	1.18	2.10	8.03	0.00	0.00	8.27	0.93	0.00	0.00
Sep-2025	0.01	6.59	0.31	0.57	2.87	0.00	0.00	6.84	0.00	0.00	123.98
Oct-2025	0.00	4.74	0.24	0.46	0.00	0.03	0.00	0.00	0.00	0.19	123.83
Nov-2025	0.00	0.81	0.00	0.38	0.00	0.12	0.00	0.00	0.00	0.84	123.52
Dec-2025	0.00	0.00	0.00	0.15	0.00	0.02	0.00	1.59	0.00	3.86	121.77
Jan-2026	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Feb-2026	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.07	123.94
Mar-2026	0.01	0.00	0.07	0.06	0.00	0.08	0.00	0.00	0.00	0.51	123.68
Apr-2026	0.01	0.18	0.53	2.10	0.42	0.00	0.00	0.00	0.00	0.00	123.98
May-2026	0.01	1.19	0.94	2.11	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2026	0.00	1.54	1.30	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2026	0.00	0.00	1.47	1.47	0.00	7.24	0.00	4.04	0.00	58.37	0.00
Aug-2026	0.00	0.00	1.06	1.03	0.00	5.30	0.00	0.00	0.00	35.01	0.00
Sep-2026	0.00	2.17	0.31	0.38	0.00	0.02	0.00	0.00	0.00	0.13	119.65
Oct-2026	0.00	0.00	0.19	0.45	0.00	2.22	0.00	8.27	9.47	65.24	0.00
Nov-2026	4.49	0.00	0.00	0.89	14.20	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2026	6.70	0.00	1.04	0.98	47.84	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2027	1.91	0.00	2.14	0.28	62.37	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2027	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.26	0.00	0.66	123.59

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Table B1 (Cont.)- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

Apr-2027	0.00	0.00	0.04	1.66	0.00	0.06	0.00	0.00	0.00	0.43	123.72
May-2027	0.00	0.00	0.81	1.18	0.00	5.57	0.00	8.05	0.00	56.70	0.00
Jun-2027	0.00	0.00	1.36	1.47	0.00	7.12	0.00	0.71	0.00	49.01	0.00
Jul-2027	0.00	0.00	1.54	1.23	0.00	6.12	0.00	8.27	7.89	77.19	0.00
Aug-2027	0.00	0.00	1.10	0.83	0.00	4.29	0.00	6.45	0.00	40.99	0.00
Sep-2027	0.00	0.00	0.33	0.38	0.00	0.75	0.00	8.27	8.50	60.20	0.00
Oct-2027	0.00	0.00	0.22	0.46	0.00	2.32	0.00	8.27	8.27	69.86	0.00
Nov-2027	11.29	9.54	2.44	1.48	110.23	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2027	12.05	47.53	2.44	1.35	161.73	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2028	1.78	0.00	0.00	0.26	5.99	0.00	0.00	0.00	0.00	0.00	123.98
Feb-2028	0.00	0.00	0.00	0.07	0.00	0.01	0.00	8.27	8.71	52.85	0.00
Mar-2028	0.00	0.00	0.07	0.06	0.00	0.30	0.00	0.00	0.00	1.97	120.93
Apr-2028	0.00	0.00	0.08	1.29	0.00	6.92	0.00	1.42	0.00	49.40	0.00
May-2028	0.01	0.01	0.51	2.20	0.00	2.77	0.00	0.00	0.00	18.09	0.00
Jun-2028	0.00	0.00	0.62	1.48	0.00	7.95	0.00	0.47	0.00	53.04	0.00
Jul-2028	0.00	0.00	0.68	1.23	0.00	9.33	0.87	2.76	0.00	70.33	0.00
Aug-2028	0.00	0.00	0.55	0.90	0.00	5.66	0.00	3.00	0.00	40.96	0.00
Sep-2028	0.01	0.39	0.21	0.47	0.82	0.00	0.00	0.00	0.00	0.00	110.74
Oct-2028	0.00	0.00	0.11	0.45	0.00	2.30	0.00	8.27	8.91	54.96	0.00
Nov-2028	2.16	0.00	0.00	0.67	6.35	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2028	3.49	0.00	1.87	0.52	54.96	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2029	1.91	19.87	2.44	0.28	101.85	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2029	1.52	15.84	2.44	0.23	99.38	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2029	0.01	0.00	0.06	0.06	0.00	0.00	0.00	0.28	0.00	0.68	123.57
Apr-2029	0.01	0.21	0.31	2.31	0.50	0.00	0.00	0.00	0.00	0.00	123.98
May-2029	0.01	1.19	0.84	1.93	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2029	0.00	1.54	1.31	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2029	0.00	0.00	1.47	1.47	0.00	7.52	0.00	8.27	2.93	76.80	0.00
Aug-2029	0.00	0.00	1.18	1.11	0.00	5.54	0.00	3.44	0.00	44.08	0.00
Sep-2029	0.00	0.00	0.25	0.53	0.00	0.02	0.00	8.27	8.27	61.88	0.00
Oct-2029	0.00	4.60	0.14	0.44	0.00	0.03	0.00	0.00	0.00	0.18	115.85
Nov-2029	0.00	0.00	0.02	0.38	0.00	1.16	0.00	8.27	8.67	63.37	0.00
Dec-2029	0.00	0.00	0.00	0.30	0.00	0.02	0.00	0.00	0.00	0.12	113.11
Jan-2030	1.91	37.27	2.44	0.28	119.97	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2030	1.57	1.44	2.44	0.23	72.26	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2030	0.01	0.00	0.11	0.05	0.00	0.01	0.00	0.00	0.00	0.09	123.93
Apr-2030	0.00	4.02	0.42	1.27	0.00	3.51	0.00	0.00	0.00	23.67	0.00
May-2030	0.01	8.96	0.94	1.95	19.31	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2030	0.00	0.00	1.35	1.49	0.00	7.50	0.00	0.52	0.00	52.16	0.00
Jul-2030	0.00	0.00	1.48	1.23	0.00	9.33	0.44	8.27	8.69	121.14	0.00
Aug-2030	0.00	0.00	1.18	0.90	0.00	5.66	0.00	3.00	0.00	42.19	0.00
Sep-2030	0.00	0.00	0.02	0.38	0.00	0.03	0.00	8.10	0.00	18.27	0.00
Oct-2030	0.00	4.32	0.04	0.40	0.00	0.03	0.00	0.00	0.00	0.17	112.99
Nov-2030	0.00	0.00	0.00	0.38	0.00	1.08	0.00	8.27	8.23	44.39	0.00
Dec-2030	14.64	47.53	2.44	1.59	165.12	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2031	1.91	0.00	1.76	0.28	52.32	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2031	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.29	0.00	0.75	123.53
Mar-2031	0.14	0.00	0.00	0.03	0.48	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2031	0.00	0.00	0.03	1.35	0.00	0.00	0.00	0.00	0.00	0.00	123.98
May-2031	0.01	1.19	0.52	1.85	2.78	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2031	0.00	1.54	1.36	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2031	0.00	16.21	1.53	1.43	0.00	4.61	0.00	0.00	0.00	31.07	0.00
Aug-2031	0.01	15.55	1.25	2.08	24.19	0.00	0.00	3.59	0.00	0.00	0.00

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Table B1 (Cont.)- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

Sep-2031	0.00	2.11	0.34	0.38	0.00	0.02	0.00	8.27	2.69	25.85	0.00
Oct-2031	0.00	4.71	0.23	0.46	0.00	0.03	0.00	0.00	0.00	0.19	122.38
Nov-2031	0.00	2.35	0.01	0.38	0.00	0.05	0.00	0.00	0.00	0.34	122.36
Dec-2031	0.00	0.00	0.00	0.26	0.00	0.02	0.00	8.27	8.88	44.52	0.00
Jan-2032	1.91	0.00	1.97	0.28	57.91	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2032	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2032	0.01	0.00	0.03	0.05	0.00	0.01	0.00	8.27	8.27	61.99	0.00
Apr-2032	0.00	0.00	0.51	1.54	0.00	6.62	0.00	4.09	0.00	53.19	0.00
May-2032	0.00	0.00	0.90	1.22	0.00	5.96	0.00	4.11	0.00	47.84	0.00
Jun-2032	0.00	0.00	1.24	1.49	0.00	7.25	0.00	0.39	0.00	47.29	0.00
Jul-2032	0.00	0.00	1.36	1.23	0.00	6.12	0.00	8.27	8.84	90.81	0.00
Aug-2032	0.00	0.00	1.05	0.88	0.00	4.56	0.00	3.11	0.00	33.42	0.00
Sep-2032	0.00	0.00	0.23	0.38	0.00	0.04	0.00	7.79	0.00	16.63	0.00
Oct-2032	0.00	0.00	0.23	0.46	0.00	2.35	0.00	8.27	8.27	67.42	0.00
Nov-2032	0.00	0.00	0.01	0.38	0.00	1.20	0.00	8.27	8.27	57.12	0.00
Dec-2032	0.00	0.00	0.00	0.25	0.00	0.02	0.00	8.27	9.48	41.76	0.00
Jan-2033	1.91	5.93	2.44	0.28	69.01	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2033	1.52	0.00	0.96	0.23	25.53	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2033	0.54	0.00	0.00	0.08	1.55	0.00	0.00	0.00	0.00	0.00	104.68
Apr-2033	0.00	0.00	0.05	1.29	0.00	6.70	0.00	8.27	9.01	74.72	0.00
May-2033	0.01	47.53	0.31	2.04	50.95	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2033	0.00	0.00	0.44	1.49	0.00	9.33	1.29	0.46	0.00	59.71	0.00
Jul-2033	0.00	0.00	0.48	1.23	0.00	9.33	0.86	8.27	9.10	90.03	0.00
Aug-2033	0.00	0.00	0.39	0.91	0.00	5.63	0.00	3.00	0.00	33.24	0.00
Sep-2033	0.00	0.51	0.02	0.51	0.86	0.00	0.00	0.00	0.00	0.00	90.13
Oct-2033	0.00	0.00	0.10	0.46	0.00	2.34	0.00	8.27	7.89	40.52	0.00
Nov-2033	6.25	0.00	0.53	1.01	24.98	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2033	5.15	0.00	1.67	0.77	46.40	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2034	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.37	0.00	0.72	94.41
Feb-2034	1.57	0.00	1.25	0.23	29.80	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2034	0.54	7.06	2.44	0.08	67.95	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2034	0.00	0.00	0.06	1.25	0.00	6.28	0.00	8.27	8.27	86.40	0.00
May-2034	0.00	11.27	0.76	1.15	0.00	1.88	0.00	0.00	0.00	10.01	0.00
Jun-2034	0.00	0.00	0.94	1.40	0.00	8.31	0.00	1.75	0.00	46.83	0.00
Jul-2034	0.00	0.00	1.11	1.21	0.00	9.33	2.65	8.27	8.27	100.23	0.00
Aug-2034	0.00	0.00	0.87	0.87	0.00	4.35	0.00	6.13	0.00	29.16	0.00
Sep-2034	0.01	0.37	0.13	0.24	0.57	0.00	0.00	0.00	0.00	0.00	81.25
Oct-2034	0.00	0.00	0.14	0.49	0.00	2.24	0.00	8.27	8.27	49.56	0.00
Nov-2034	0.00	0.00	0.00	0.38	0.00	0.21	0.00	8.27	4.88	19.54	0.00
Dec-2034	5.04	0.00	1.68	0.73	39.06	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2035	0.00	0.00	0.00	0.12	0.00	0.01	0.00	8.27	8.27	38.55	0.00
Feb-2035	4.15	47.53	2.44	0.50	97.50	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2035	1.17	47.53	2.44	0.14	101.45	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2035	0.00	1.98	0.29	1.38	0.00	5.17	0.00	0.00	0.00	27.33	0.00
May-2035	0.00	0.00	1.05	1.19	0.00	5.57	0.00	0.00	0.00	28.75	0.00
Jun-2035	0.00	0.00	1.26	1.44	0.00	7.00	0.00	1.09	0.00	37.04	0.00
Jul-2035	0.00	0.00	1.45	1.23	0.00	6.36	0.00	8.27	5.98	54.21	0.00
Aug-2035	0.00	0.00	1.16	0.91	0.00	5.62	0.00	8.27	4.95	45.32	0.00
Sep-2035	0.00	0.00	0.29	0.38	0.00	0.74	0.00	8.27	7.99	29.85	0.00
Oct-2035	0.00	47.53	0.35	0.66	45.98	0.00	0.00	0.00	0.00	0.00	0.00
Nov-2035	2.99	0.00	1.46	0.84	34.19	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2035	6.78	34.11	2.44	0.90	109.56	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2036	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.61	0.00	1.20	98.41

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Table B1 (Cont.)- NODOS Project- CALSIM Model - High Case, 30-year Planning Period

Feb-2036	4.15	47.53	2.44	0.50	121.05	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2036	0.00	0.00	0.00	0.02	0.00	0.00	0.00	8.27	8.27	55.61	0.00
Apr-2036	0.00	47.53	0.02	1.19	53.34	0.00	0.00	0.00	0.00	0.00	0.00
May-2036	0.01	47.53	0.61	1.99	55.21	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2036	0.00	0.00	1.47	1.59	0.00	7.65	0.00	0.00	0.00	47.15	0.00
Jul-2036	0.00	0.00	1.59	1.47	0.00	7.24	0.00	8.27	2.65	65.19	0.00
Aug-2036	0.00	0.00	1.27	1.11	0.00	5.75	0.00	3.52	0.00	39.92	0.00
Sep-2036	0.00	0.00	0.35	0.38	0.00	1.05	0.00	8.27	5.85	33.63	0.00
Oct-2036	0.00	0.00	0.09	0.43	0.00	2.16	0.00	8.27	9.21	49.60	0.00
Nov-2036	19.36	47.53	2.44	2.06	160.65	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2036	0.00	0.00	0.00	0.28	0.00	0.02	0.00	0.22	0.00	0.57	110.47
Jan-2037	4.55	47.53	2.44	0.55	134.60	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2037	0.00	0.00	0.00	0.06	0.00	0.01	0.00	2.88	0.00	6.57	115.58
Mar-2037	0.00	0.00	0.07	0.08	0.00	0.39	0.00	2.04	0.00	7.11	114.94
Apr-2037	0.00	0.00	0.48	1.55	0.00	9.27	0.00	8.27	9.33	105.36	0.00
May-2037	0.00	0.00	0.48	1.19	0.00	8.45	0.00	0.00	0.00	52.71	0.00
Jun-2037	0.00	0.00	0.52	1.42	0.00	6.88	0.00	1.45	0.00	44.57	0.00
Jul-2037	0.00	0.00	0.62	1.22	0.00	9.33	0.37	3.38	0.00	63.73	0.00
Aug-2037	0.00	0.00	0.49	0.90	0.00	5.83	0.00	3.12	0.00	38.85	0.00
Sep-2037	0.01	0.56	0.19	0.27	1.07	0.00	0.00	0.00	0.00	0.00	101.79
Oct-2037	0.00	0.00	0.02	0.46	0.00	2.08	0.00	8.27	8.50	60.02	0.00
Nov-2037	6.18	0.00	1.54	0.99	49.91	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2037	4.16	0.00	1.79	0.62	52.14	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2038	1.91	19.87	2.44	0.28	97.47	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2038	1.57	24.85	2.44	0.23	107.01	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2038	0.01	0.00	0.05	0.07	0.00	0.16	0.00	8.27	8.27	60.66	0.00
Apr-2038	0.00	0.00	0.04	1.90	0.00	0.86	0.00	0.00	0.00	5.45	113.77
May-2038	0.00	0.00	0.86	1.20	0.00	5.78	0.00	0.80	0.00	38.43	0.00
Jun-2038	0.00	4.22	1.36	1.60	0.00	5.45	0.00	0.00	0.00	34.05	0.00
Jul-2038	0.00	0.00	1.46	1.47	0.00	7.23	0.00	8.27	2.65	66.81	0.00
Aug-2038	0.00	0.00	0.97	0.98	0.00	5.07	0.00	3.45	0.00	36.89	0.00
Sep-2038	0.00	2.17	0.31	0.38	0.00	0.01	0.00	0.00	0.00	0.03	106.74
Oct-2038	0.00	4.76	0.24	0.46	0.00	0.03	0.00	0.00	0.00	0.17	106.62
Nov-2038	9.25	32.36	2.44	1.27	133.29	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2038	5.06	0.00	0.48	0.75	27.90	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2039	2.10	26.02	2.44	0.30	113.76	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2039	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.43	0.00	1.08	123.34
Mar-2039	0.00	0.00	0.02	0.05	0.00	0.06	0.00	0.00	0.00	0.43	123.69
Apr-2039	0.01	0.44	0.82	2.71	1.03	0.00	0.00	0.00	0.00	0.00	123.98
May-2039	0.00	0.00	1.02	1.20	0.00	5.99	0.00	0.00	0.00	40.51	0.00
Jun-2039	0.00	0.00	1.20	1.48	0.00	7.18	0.00	4.81	0.00	58.95	0.00
Jul-2039	0.00	0.00	1.30	1.22	0.00	6.32	0.00	8.27	5.98	73.74	0.00
Aug-2039	0.00	0.00	1.04	0.90	0.00	4.49	0.00	6.26	0.00	42.03	0.00
Sep-2039	0.00	0.00	0.25	0.38	0.00	0.73	0.00	7.79	0.00	21.84	0.00
Oct-2039	0.00	0.00	0.22	0.46	0.00	2.35	0.00	8.27	8.27	71.74	0.00
Nov-2039	5.00	0.00	2.37	0.83	72.23	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2039	4.22	0.00	1.78	0.63	57.66	0.00	0.00	0.00	0.00	0.00	0.00

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Table B2- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

Plant Mode	Pumping , MW					Generation, MW					
Plant Name	TRR	Sac River	TC Canal	GCID Canal	Sites	TRR		Sac River		Sites	Pump Back
Installed Capacity, MW	19.36	47.53	2.44	2.87	179.70	9.33		8.27		123.98	123.98
Installed Capacity, cfs	1800	2000	2121	3000	5900	1500		1500		5100	5100
Date	All Hours					On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	On-Peak
Jan-2010	1.91	0.00	1.84	0.28	54.39	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2010	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.42	0.00	1.05	123.36
Mar-2010	0.20	0.00	0.00	0.04	0.67	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2010	0.00	0.00	0.02	1.30	0.00	0.07	0.00	0.00	0.00	0.46	123.71
May-2010	0.01	1.32	0.61	1.98	3.09	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2010	0.00	1.54	1.53	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2010	0.00	0.00	1.58	1.47	0.00	7.24	0.00	8.27	2.65	73.96	0.00
Aug-2010	0.01	8.31	1.26	2.10	11.96	0.00	0.00	3.59	0.00	0.00	0.00
Sep-2010	0.00	2.11	0.34	0.38	0.00	2.69	0.00	0.00	0.00	17.72	0.00
Oct-2010	0.00	4.71	0.22	0.46	0.00	0.03	0.00	0.00	0.00	0.19	120.30
Nov-2010	8.70	0.00	0.84	1.35	49.47	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2010	3.97	0.00	0.06	0.59	14.95	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2011	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.34	0.00	0.86	123.48
Feb-2011	0.20	0.00	0.00	0.09	0.66	0.00	0.00	0.00	0.00	0.00	123.98
Mar-2011	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2011	0.01	0.01	0.37	1.99	0.00	0.05	0.00	0.00	0.00	0.32	123.79
May-2011	0.00	0.00	0.99	1.20	0.00	5.68	0.00	0.00	0.00	38.39	0.00
Jun-2011	0.00	0.00	1.40	1.60	0.00	7.35	0.00	0.00	0.00	49.31	0.00
Jul-2011	0.00	0.00	1.47	1.47	0.00	9.33	2.18	8.27	8.27	132.52	0.00
Aug-2011	0.00	0.00	1.18	1.11	0.00	5.54	0.00	3.38	0.00	41.38	0.00
Sep-2011	0.00	0.00	0.32	0.38	0.00	1.07	0.00	6.81	0.00	21.10	0.00
Oct-2011	0.00	0.00	0.20	0.46	0.00	2.32	0.00	8.27	6.70	46.38	0.00
Nov-2011	0.00	0.00	0.00	0.38	0.00	0.96	0.00	2.22	0.00	10.18	0.00
Dec-2011	5.24	0.00	0.22	0.78	20.26	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2012	1.91	28.79	2.44	0.28	109.13	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2012	1.52	0.00	0.96	0.23	28.88	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2012	0.00	0.00	0.02	0.03	0.00	0.06	0.00	0.28	0.00	1.02	117.73
Apr-2012	0.00	0.00	0.07	1.30	0.00	6.60	0.00	8.27	8.27	102.09	0.00
May-2012	0.00	3.90	0.47	1.64	0.00	2.28	0.00	0.00	0.00	14.08	0.00
Jun-2012	0.00	0.00	0.68	1.45	0.00	8.66	0.00	0.96	0.00	55.56	0.00
Jul-2012	0.00	0.00	0.77	1.23	0.00	9.33	0.87	3.51	0.00	67.27	0.00
Aug-2012	0.00	0.00	0.62	0.91	0.00	5.64	0.00	3.00	0.00	38.04	0.00
Sep-2012	0.01	0.00	0.06	0.51	0.00	0.00	0.00	8.27	9.25	41.61	0.00
Oct-2012	0.00	0.00	0.10	0.45	0.00	2.20	0.00	8.27	8.27	60.40	0.00
Nov-2012	6.40	0.00	0.15	1.03	19.65	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2012	4.93	0.00	2.44	0.73	67.27	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2013	1.85	0.00	1.50	0.28	39.35	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2013	4.15	47.53	2.44	0.50	129.17	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2013	0.54	35.25	2.44	0.08	115.46	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2013	0.00	11.06	0.08	1.25	0.00	1.13	0.00	0.00	0.00	7.50	117.74
May-2013	0.01	0.00	0.73	1.95	0.00	0.89	0.00	0.00	0.00	5.93	118.24
Jun-2013	0.00	0.00	1.02	1.38	0.00	8.13	0.00	1.81	0.00	58.29	0.00
Jul-2013	0.00	0.00	1.27	1.23	0.00	7.57	0.00	8.27	5.87	80.18	0.00
Aug-2013	0.00	0.00	1.01	0.91	0.00	5.64	0.00	6.21	0.00	48.64	0.00
Sep-2013	0.00	0.00	0.24	0.38	0.00	0.78	0.00	8.10	0.00	22.50	0.00
Oct-2013	0.00	0.00	0.04	0.40	0.00	2.08	0.00	8.27	8.27	66.94	0.00
Nov-2013	4.43	0.00	0.09	0.89	14.97	0.00	0.00	0.00	0.00	0.00	0.00

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Table B2 (Cont.)- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

Dec-2013	3.49	0.00	1.87	0.52	55.16	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2014	7.97	47.53	2.44	0.94	147.85	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2014	0.00	0.00	0.00	0.07	0.00	0.01	0.00	8.27	8.27	61.90	0.00
Mar-2014	0.51	0.00	1.57	0.10	41.51	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2014	0.00	0.00	0.53	1.52	0.00	6.46	0.00	8.27	7.29	79.33	0.00
May-2014	0.00	7.68	1.00	1.17	0.00	2.09	0.00	0.00	0.00	13.47	0.00
Jun-2014	0.00	0.00	0.99	1.49	0.00	8.71	0.00	0.43	0.00	57.32	0.00
Jul-2014	0.00	0.00	1.32	1.22	0.00	9.33	0.35	3.38	0.00	67.79	0.00
Aug-2014	0.00	0.00	1.07	0.90	0.00	5.85	0.00	3.12	0.00	41.72	0.00
Sep-2014	0.00	0.00	0.47	0.38	0.00	0.69	0.00	7.79	0.00	20.64	0.00
Oct-2014	0.00	0.00	0.20	0.45	0.00	2.25	0.00	8.27	8.27	65.53	0.00
Nov-2014	0.75	0.00	0.00	0.53	2.12	0.00	0.00	0.00	0.00	0.00	103.90
Dec-2014	3.76	0.00	1.84	0.56	52.96	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2015	0.00	0.00	0.00	0.14	0.00	0.01	0.00	0.43	0.00	0.94	107.80
Feb-2015	1.57	0.00	0.96	0.23	26.90	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2015	0.54	3.56	2.44	0.08	68.29	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2015	0.00	3.27	0.46	1.29	0.00	5.23	0.00	0.00	0.00	32.71	0.00
May-2015	0.00	0.00	0.66	1.13	0.00	7.47	0.00	8.05	0.00	63.24	0.00
Jun-2015	0.00	0.00	0.77	1.38	0.00	8.72	0.00	1.75	0.00	55.96	0.00
Jul-2015	0.00	0.00	0.95	1.23	0.00	9.33	0.59	8.27	8.27	105.56	0.00
Aug-2015	0.00	0.00	0.76	0.90	0.00	5.81	0.00	3.11	0.00	36.68	0.00
Sep-2015	0.01	0.00	0.35	0.51	0.00	0.00	0.00	8.27	8.27	47.51	0.00
Oct-2015	0.00	0.00	0.04	0.41	0.00	2.07	0.00	8.27	7.38	38.08	0.00
Nov-2015	1.94	0.00	0.00	0.69	4.76	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2015	0.00	0.00	0.00	0.26	0.00	0.00	0.00	8.27	9.37	35.16	0.00
Jan-2016	1.40	0.00	0.98	0.28	21.94	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2016	0.01	0.00	0.02	0.08	0.00	0.06	0.00	0.97	0.00	1.93	88.51
Mar-2016	0.00	0.00	0.05	0.02	0.00	0.53	0.00	0.00	0.00	2.57	87.92
Apr-2016	0.00	0.00	0.09	0.95	0.00	0.46	0.00	0.00	0.00	2.23	87.93
May-2016	0.01	47.53	0.52	1.47	46.05	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2016	0.01	47.53	1.10	2.42	48.23	0.00	0.00	0.00	0.00	0.00	0.00
Jul-2016	0.00	0.00	1.58	1.23	0.00	6.47	0.00	8.27	5.98	60.32	0.00
Aug-2016	0.00	0.00	1.26	0.91	0.00	4.60	0.00	3.44	0.00	29.12	0.00
Sep-2016	0.00	0.00	0.30	0.38	0.00	0.68	0.00	8.27	8.27	47.82	0.00
Oct-2016	0.00	0.00	0.14	0.44	0.00	2.28	0.00	8.27	8.27	53.60	0.00
Nov-2016	0.00	0.00	0.01	0.38	0.00	1.03	0.00	8.27	8.95	42.09	0.00
Dec-2016	3.95	0.00	0.50	0.59	17.03	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2017	1.57	0.00	0.00	0.28	3.47	0.00	0.00	0.00	0.00	0.00	80.74
Feb-2017	1.57	0.00	0.96	0.23	20.37	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2017	0.54	0.00	0.51	0.08	10.35	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2017	0.00	0.00	0.07	2.17	0.00	0.71	0.00	0.10	0.00	3.42	82.49
May-2017	0.01	0.01	0.67	2.01	0.00	1.22	0.00	0.00	0.00	5.57	80.48
Jun-2017	0.00	0.00	0.99	1.49	0.00	8.87	0.00	0.46	0.00	40.47	0.00
Jul-2017	0.00	0.00	1.09	1.23	0.00	7.94	0.00	8.27	4.45	50.89	0.00
Aug-2017	0.00	0.00	0.86	0.90	0.00	4.50	0.00	3.00	0.00	21.53	0.00
Sep-2017	0.01	0.46	0.17	0.51	0.61	0.00	0.00	0.00	0.00	0.00	70.44
Oct-2017	0.00	0.00	0.19	0.46	0.00	2.35	0.00	8.27	8.27	42.61	0.00
Nov-2017	0.00	0.00	0.00	0.38	0.00	0.83	0.00	6.49	0.00	10.87	0.00
Dec-2017	2.49	0.00	0.00	0.52	4.35	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2018	1.91	0.00	0.91	0.28	16.49	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2018	4.15	47.53	2.44	0.50	89.31	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2018	0.00	0.00	0.01	0.03	0.00	0.06	0.00	0.00	0.00	0.27	79.38
Apr-2018	0.00	0.00	0.40	2.36	0.00	2.65	0.00	0.00	0.00	11.37	0.00

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Table B2 (Cont.)- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

May-2018	0.01	0.01	0.41	2.19	0.00	2.95	0.00	0.00	0.00	12.46	0.00
Jun-2018	0.00	9.98	0.49	1.47	0.00	2.91	0.00	0.00	0.00	12.02	0.00
Jul-2018	0.01	0.48	0.54	2.32	0.00	3.72	0.00	0.00	0.00	15.00	0.00
Aug-2018	0.00	0.00	0.43	0.91	0.00	4.52	0.00	6.03	0.00	25.65	0.00
Sep-2018	1.03	0.53	0.02	0.60	3.67	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2018	0.00	0.00	0.05	0.41	0.00	2.11	0.00	4.75	0.00	14.20	0.00
Nov-2018	7.02	0.00	1.51	1.12	37.59	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2018	3.62	47.53	2.44	0.53	96.76	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2019	4.55	47.53	2.44	0.55	111.87	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2019	4.15	47.53	2.44	0.50	120.98	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2019	2.74	47.53	2.46	0.34	125.85	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2019	0.00	0.00	0.44	1.45	0.00	6.19	0.00	8.27	9.40	89.26	0.00
May-2019	0.01	47.53	0.83	1.87	56.75	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2019	0.00	0.00	1.31	1.49	0.00	7.25	0.00	1.20	0.00	48.52	0.00
Jul-2019	0.00	0.00	1.44	1.23	0.00	6.13	0.00	8.27	9.18	87.86	0.00
Aug-2019	0.00	0.00	1.15	0.90	0.00	4.51	0.00	6.24	0.00	39.24	0.00
Sep-2019	0.00	0.00	0.30	0.38	0.00	0.76	0.00	8.10	0.00	21.08	0.00
Oct-2019	0.00	0.00	0.05	0.41	0.00	2.09	0.00	8.27	8.27	62.78	0.00
Nov-2019	2.57	0.00	0.28	0.66	13.04	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2019	10.10	47.53	2.44	1.16	143.01	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2020	4.55	47.53	2.44	0.55	136.67	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2020	1.52	0.00	1.94	0.23	55.74	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2020	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.33	0.00	0.80	123.52
Apr-2020	0.01	0.24	0.11	2.09	0.57	0.00	0.00	0.00	0.00	0.00	123.98
May-2020	0.01	1.19	0.85	2.19	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2020	0.01	1.54	1.21	2.85	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2020	0.01	9.10	1.46	2.76	0.97	0.00	0.00	0.00	0.00	0.00	123.78
Aug-2020	0.01	11.28	1.18	2.10	8.03	0.00	0.00	8.27	0.93	0.00	0.00
Sep-2020	0.01	6.59	0.31	0.57	2.87	0.00	0.00	6.84	0.00	0.00	123.98
Oct-2020	0.00	4.74	0.24	0.46	0.00	0.03	0.00	0.00	0.00	0.19	123.83
Nov-2020	0.00	0.81	0.00	0.38	0.00	0.12	0.00	0.00	0.00	0.84	123.52
Dec-2020	0.00	0.00	0.00	0.15	0.00	0.02	0.00	1.59	0.00	3.86	121.77
Jan-2021	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Feb-2021	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.07	123.94
Mar-2021	0.01	0.00	0.07	0.06	0.00	0.07	0.00	0.00	0.00	0.49	123.68
Apr-2021	0.01	0.18	0.53	2.10	0.42	0.00	0.00	0.00	0.00	0.00	123.98
May-2021	0.01	1.19	0.94	2.11	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2021	0.00	1.54	1.30	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2021	0.00	0.00	1.47	1.47	0.00	7.24	0.00	4.04	0.00	58.37	0.00
Aug-2021	0.00	0.00	1.06	1.03	0.00	5.30	0.00	0.00	0.00	35.01	0.00
Sep-2021	0.00	2.17	0.31	0.38	0.00	0.02	0.00	0.00	0.00	0.13	119.65
Oct-2021	0.00	0.00	0.19	0.45	0.00	2.31	0.00	8.27	9.41	67.75	0.00
Nov-2021	4.49	0.00	0.00	0.89	14.20	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2021	6.70	0.00	1.04	0.98	47.84	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2022	1.91	0.00	2.14	0.28	62.37	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2022	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.26	0.00	0.66	123.59
Mar-2022	0.13	0.00	0.00	0.03	0.42	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2022	0.00	0.00	0.04	1.66	0.00	0.06	0.00	0.00	0.00	0.43	123.72
May-2022	0.00	0.00	0.81	1.18	0.00	5.57	0.00	8.05	0.00	56.70	0.00
Jun-2022	0.00	0.00	1.36	1.47	0.00	7.12	0.00	0.71	0.00	49.01	0.00
Jul-2022	0.00	0.00	1.54	1.23	0.00	6.36	0.00	8.27	7.91	80.15	0.00
Aug-2022	0.00	0.00	1.10	0.83	0.00	4.13	0.00	6.21	0.00	39.47	0.00
Sep-2022	0.00	0.00	0.33	0.38	0.00	0.75	0.00	8.27	8.50	60.20	0.00

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Table B2 (Cont.)- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

Oct-2022	0.00	0.00	0.22	0.46	0.00	2.32	0.00	8.27	8.27	69.86	0.00
Nov-2022	11.29	9.54	2.44	1.48	110.23	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2022	12.05	47.53	2.44	1.35	161.73	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2023	1.78	0.00	0.00	0.26	5.99	0.00	0.00	0.00	0.00	0.00	123.98
Feb-2023	0.00	0.00	0.00	0.07	0.00	0.01	0.00	8.27	9.42	55.05	0.00
Mar-2023	0.00	0.00	0.07	0.06	0.00	0.30	0.00	0.00	0.00	1.97	120.93
Apr-2023	0.00	0.00	0.08	1.29	0.00	6.92	0.00	1.42	0.00	49.40	0.00
May-2023	0.01	0.01	0.51	2.20	0.00	2.77	0.00	0.00	0.00	18.09	0.00
Jun-2023	0.00	0.00	0.62	1.48	0.00	7.95	0.00	0.47	0.00	53.04	0.00
Jul-2023	0.00	0.00	0.68	1.23	0.00	9.33	0.87	2.76	0.00	70.33	0.00
Aug-2023	0.00	0.00	0.55	0.90	0.00	5.66	0.00	3.00	0.00	40.96	0.00
Sep-2023	0.01	0.39	0.21	0.47	0.82	0.00	0.00	0.00	0.00	0.00	110.74
Oct-2023	0.00	0.00	0.11	0.45	0.00	2.30	0.00	8.27	8.91	54.96	0.00
Nov-2023	2.16	0.00	0.00	0.67	6.35	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2023	3.49	0.00	1.87	0.52	54.96	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2024	1.91	19.87	2.44	0.28	101.85	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2024	1.52	15.84	2.44	0.23	99.38	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2024	0.01	0.00	0.06	0.06	0.00	0.00	0.00	0.29	0.00	0.70	123.57
Apr-2024	0.01	0.21	0.31	2.31	0.50	0.00	0.00	0.00	0.00	0.00	123.98
May-2024	0.01	1.19	0.84	1.93	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2024	0.00	1.54	1.31	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2024	0.00	0.00	1.47	1.47	0.00	7.24	0.00	8.27	2.65	73.96	0.00
Aug-2024	0.00	0.00	1.18	1.11	0.00	5.54	0.00	3.44	0.00	44.08	0.00
Sep-2024	0.00	0.00	0.25	0.53	0.00	0.02	0.00	8.27	8.27	61.88	0.00
Oct-2024	0.00	4.60	0.14	0.44	0.00	0.03	0.00	0.00	0.00	0.18	115.85
Nov-2024	0.00	0.00	0.02	0.38	0.00	1.16	0.00	8.27	8.67	63.37	0.00
Dec-2024	0.00	0.00	0.00	0.30	0.00	0.02	0.00	0.00	0.00	0.12	113.11
Jan-2025	1.91	37.27	2.44	0.28	119.97	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2025	1.57	1.44	2.44	0.23	72.26	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2025	0.01	0.00	0.11	0.05	0.00	0.01	0.00	0.00	0.00	0.09	123.93
Apr-2025	0.00	4.02	0.42	1.27	0.00	3.51	0.00	0.00	0.00	23.67	0.00
May-2025	0.01	8.96	0.94	1.95	19.31	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2025	0.00	0.00	1.35	1.49	0.00	7.50	0.00	0.52	0.00	52.16	0.00
Jul-2025	0.00	0.00	1.48	1.23	0.00	9.33	0.44	8.27	8.69	121.14	0.00
Aug-2025	0.00	0.00	1.18	0.90	0.00	5.88	0.00	3.12	0.00	43.81	0.00
Sep-2025	0.00	0.00	0.02	0.38	0.00	0.03	0.00	7.79	0.00	17.56	0.00
Oct-2025	0.00	4.32	0.04	0.40	0.00	0.03	0.00	0.00	0.00	0.17	112.99
Nov-2025	0.00	0.00	0.00	0.38	0.00	1.12	0.00	8.27	8.23	46.17	0.00
Dec-2025	14.64	47.53	2.44	1.59	165.12	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2026	1.91	0.00	1.76	0.28	52.32	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2026	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.29	0.00	0.75	123.53
Mar-2026	0.14	0.00	0.00	0.03	0.48	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2026	0.00	0.00	0.03	1.35	0.00	0.00	0.00	0.00	0.00	0.00	123.98
May-2026	0.01	1.19	0.52	1.85	2.78	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2026	0.00	1.54	1.36	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2026	0.00	16.21	1.53	1.43	0.00	4.61	0.00	0.00	0.00	31.07	0.00
Aug-2026	0.01	15.55	1.25	2.08	24.19	0.00	0.00	3.59	0.00	0.00	0.00
Sep-2026	0.00	2.11	0.34	0.38	0.00	0.02	0.00	8.27	2.69	25.85	0.00
Oct-2026	0.00	4.71	0.23	0.46	0.00	0.03	0.00	0.00	0.00	0.19	122.38
Nov-2026	0.00	2.35	0.01	0.38	0.00	0.05	0.00	0.00	0.00	0.34	122.36
Dec-2026	0.00	0.00	0.00	0.26	0.00	0.02	0.00	8.27	8.88	44.52	0.00
Jan-2027	1.91	0.00	1.97	0.28	57.91	0.00	0.00	0.00	0.00	0.00	0.00

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Table B2 (Cont.)- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

Feb-2027	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2027	0.01	0.00	0.03	0.05	0.00	0.01	0.00	8.27	8.27	61.99	0.00
Apr-2027	0.00	0.00	0.51	1.54	0.00	6.62	0.00	4.09	0.00	53.19	0.00
May-2027	0.00	0.00	0.90	1.22	0.00	5.96	0.00	4.11	0.00	47.84	0.00
Jun-2027	0.00	0.00	1.24	1.49	0.00	7.25	0.00	0.39	0.00	47.29	0.00
Jul-2027	0.00	0.00	1.36	1.23	0.00	6.12	0.00	8.27	8.84	90.81	0.00
Aug-2027	0.00	0.00	1.05	0.88	0.00	4.56	0.00	3.11	0.00	33.42	0.00
Sep-2027	0.00	0.00	0.23	0.38	0.00	0.04	0.00	7.79	0.00	16.63	0.00
Oct-2027	0.00	0.00	0.23	0.46	0.00	2.35	0.00	8.27	8.27	67.42	0.00
Nov-2027	0.00	0.00	0.01	0.38	0.00	1.20	0.00	8.27	8.27	57.12	0.00
Dec-2027	0.00	0.00	0.00	0.25	0.00	0.02	0.00	8.27	9.48	41.76	0.00
Jan-2028	1.91	5.93	2.44	0.28	69.01	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2028	1.52	0.00	0.96	0.23	25.53	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2028	0.54	0.00	0.00	0.08	1.55	0.00	0.00	0.00	0.00	0.00	104.68
Apr-2028	0.00	0.00	0.05	1.29	0.00	6.96	0.00	8.27	8.97	77.71	0.00
May-2028	0.01	47.53	0.31	2.04	50.95	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2028	0.00	0.00	0.44	1.49	0.00	9.33	1.29	0.46	0.00	59.71	0.00
Jul-2028	0.00	0.00	0.48	1.23	0.00	9.33	0.86	8.27	9.10	90.03	0.00
Aug-2028	0.00	0.00	0.39	0.91	0.00	5.63	0.00	3.00	0.00	33.24	0.00
Sep-2028	0.00	0.51	0.02	0.51	0.86	0.00	0.00	0.00	0.00	0.00	90.13
Oct-2028	0.00	0.00	0.10	0.46	0.00	2.34	0.00	8.27	7.89	40.52	0.00
Nov-2028	6.25	0.00	0.53	1.01	24.98	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2028	5.15	0.00	1.67	0.77	46.40	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2029	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.36	0.00	0.70	94.41
Feb-2029	1.57	0.00	1.25	0.23	29.80	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2029	0.54	7.06	2.44	0.08	67.95	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2029	0.00	0.00	0.06	1.25	0.00	6.28	0.00	8.27	8.27	86.40	0.00
May-2029	0.00	11.27	0.76	1.15	0.00	1.88	0.00	0.00	0.00	10.01	0.00
Jun-2029	0.00	0.00	0.94	1.40	0.00	8.31	0.00	1.75	0.00	46.83	0.00
Jul-2029	0.00	0.00	1.11	1.21	0.00	9.33	2.65	8.27	8.27	100.23	0.00
Aug-2029	0.00	0.00	0.87	0.87	0.00	4.35	0.00	6.13	0.00	29.16	0.00
Sep-2029	0.01	0.37	0.13	0.24	0.57	0.00	0.00	0.00	0.00	0.00	81.25
Oct-2029	0.00	0.00	0.14	0.49	0.00	2.16	0.00	8.27	8.27	47.73	0.00
Nov-2029	0.00	0.00	0.00	0.38	0.00	0.21	0.00	8.27	4.88	19.54	0.00
Dec-2029	5.04	0.00	1.68	0.73	39.06	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2030	0.00	0.00	0.00	0.12	0.00	0.01	0.00	8.27	8.27	38.55	0.00
Feb-2030	4.15	47.53	2.44	0.50	97.50	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2030	1.17	47.53	2.44	0.14	101.45	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2030	0.00	1.98	0.29	1.38	0.00	4.97	0.00	0.00	0.00	26.28	0.00
May-2030	0.00	0.00	1.05	1.19	0.00	5.57	0.00	0.00	0.00	28.75	0.00
Jun-2030	0.00	0.00	1.26	1.44	0.00	7.28	0.00	1.13	0.00	38.52	0.00
Jul-2030	0.00	0.00	1.45	1.23	0.00	6.13	0.00	8.27	5.87	52.21	0.00
Aug-2030	0.00	0.00	1.16	0.91	0.00	5.62	0.00	8.27	4.95	45.32	0.00
Sep-2030	0.00	0.00	0.29	0.38	0.00	0.74	0.00	8.27	7.99	29.85	0.00
Oct-2030	0.00	47.53	0.35	0.66	45.98	0.00	0.00	0.00	0.00	0.00	0.00
Nov-2030	2.99	0.00	1.46	0.84	34.19	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2030	6.78	34.11	2.44	0.90	109.56	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2031	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.61	0.00	1.20	98.41
Feb-2031	4.15	47.53	2.44	0.50	121.05	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2031	0.00	0.00	0.00	0.02	0.00	0.00	0.00	8.27	8.27	55.61	0.00
Apr-2031	0.00	47.53	0.02	1.19	53.34	0.00	0.00	0.00	0.00	0.00	0.00
May-2031	0.01	47.53	0.61	1.99	55.21	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2031	0.00	0.00	1.47	1.59	0.00	7.65	0.00	0.00	0.00	47.15	0.00

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Table B2 (Cont.)- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

Jul-2031	0.00	0.00	1.59	1.47	0.00	7.24	0.00	8.27	2.65	65.19	0.00
Aug-2031	0.00	0.00	1.27	1.11	0.00	5.75	0.00	3.52	0.00	39.92	0.00
Sep-2031	0.00	0.00	0.35	0.38	0.00	1.05	0.00	8.27	5.85	33.63	0.00
Oct-2031	0.00	0.00	0.09	0.43	0.00	2.16	0.00	8.27	9.21	49.60	0.00
Nov-2031	19.36	47.53	2.44	2.06	160.65	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2031	0.00	0.00	0.00	0.28	0.00	0.02	0.00	0.22	0.00	0.57	110.47
Jan-2032	4.55	47.53	2.44	0.55	134.60	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2032	0.00	0.00	0.00	0.06	0.00	0.01	0.00	2.88	0.00	6.57	115.58
Mar-2032	0.00	0.00	0.07	0.08	0.00	0.38	0.00	1.96	0.00	6.84	114.94
Apr-2032	0.00	0.00	0.48	1.55	0.00	9.27	0.00	8.27	9.33	105.36	0.00
May-2032	0.00	0.00	0.48	1.19	0.00	8.45	0.00	0.00	0.00	52.71	0.00
Jun-2032	0.00	0.00	0.52	1.42	0.00	6.88	0.00	1.45	0.00	44.57	0.00
Jul-2032	0.00	0.00	0.62	1.22	0.00	9.33	0.37	3.38	0.00	63.73	0.00
Aug-2032	0.00	0.00	0.49	0.90	0.00	5.83	0.00	3.12	0.00	38.85	0.00
Sep-2032	0.01	0.56	0.19	0.27	1.07	0.00	0.00	0.00	0.00	0.00	101.79
Oct-2032	0.00	0.00	0.02	0.46	0.00	2.16	0.00	8.27	8.49	62.33	0.00
Nov-2032	6.18	0.00	1.54	0.99	49.91	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2032	4.16	0.00	1.79	0.62	52.14	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2033	1.91	19.87	2.44	0.28	97.47	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2033	1.57	24.85	2.44	0.23	107.01	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2033	0.01	0.00	0.05	0.07	0.00	0.16	0.00	8.27	8.27	60.66	0.00
Apr-2033	0.00	0.00	0.04	1.90	0.00	0.86	0.00	0.00	0.00	5.45	113.77
May-2033	0.00	0.00	0.86	1.20	0.00	5.78	0.00	0.80	0.00	38.43	0.00
Jun-2033	0.00	4.22	1.36	1.60	0.00	5.45	0.00	0.00	0.00	34.05	0.00
Jul-2033	0.00	0.00	1.46	1.47	0.00	7.51	0.00	8.27	2.93	69.37	0.00
Aug-2033	0.00	0.00	0.97	0.98	0.00	4.89	0.00	3.32	0.00	35.52	0.00
Sep-2033	0.00	2.17	0.31	0.38	0.00	0.01	0.00	0.00	0.00	0.03	106.74
Oct-2033	0.00	4.76	0.24	0.46	0.00	0.03	0.00	0.00	0.00	0.17	106.62
Nov-2033	9.25	32.36	2.44	1.27	133.29	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2033	5.06	0.00	0.48	0.75	27.90	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2034	2.10	26.02	2.44	0.30	113.76	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2034	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.43	0.00	1.08	123.34
Mar-2034	0.00	0.00	0.02	0.05	0.00	0.06	0.00	0.00	0.00	0.43	123.69
Apr-2034	0.01	0.44	0.82	2.71	1.03	0.00	0.00	0.00	0.00	0.00	123.98
May-2034	0.00	0.00	1.02	1.20	0.00	5.77	0.00	0.00	0.00	39.01	0.00
Jun-2034	0.00	0.00	1.20	1.48	0.00	7.18	0.00	4.81	0.00	58.95	0.00
Jul-2034	0.00	0.00	1.30	1.22	0.00	6.32	0.00	8.27	5.98	73.74	0.00
Aug-2034	0.00	0.00	1.04	0.90	0.00	4.49	0.00	6.26	0.00	42.03	0.00
Sep-2034	0.00	0.00	0.25	0.38	0.00	0.73	0.00	7.79	0.00	21.84	0.00
Oct-2034	0.00	0.00	0.22	0.46	0.00	2.35	0.00	8.27	8.27	71.74	0.00
Nov-2034	5.00	0.00	2.37	0.83	72.23	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2034	4.22	0.00	1.78	0.63	57.66	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2035	1.91	21.95	2.44	0.28	108.61	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2035	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.27	0.00	0.70	123.57
Mar-2035	0.13	0.00	0.00	0.03	0.45	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2035	0.00	0.00	0.05	1.09	0.00	0.07	0.00	0.00	0.00	0.47	123.71
May-2035	0.01	1.32	0.73	2.15	3.09	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2035	0.01	1.54	1.08	2.55	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2035	0.00	19.81	1.57	1.47	0.00	0.01	0.00	8.27	2.93	26.69	0.00
Aug-2035	0.01	17.98	1.25	2.10	27.62	0.00	0.00	3.46	0.00	0.00	0.00
Sep-2035	0.01	9.12	0.34	0.56	2.80	0.00	0.00	8.27	1.88	0.00	123.98
Oct-2035	0.00	4.74	0.23	0.46	0.00	0.03	0.00	0.00	0.00	0.19	123.83
Nov-2035	0.00	1.34	0.00	0.38	0.00	0.11	0.00	0.00	0.00	0.72	123.57

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Table B2 (Cont.)- NODOS Project- CALSIM Model – Median Case, 30-year Planning Period

Dec-2035	0.00	0.00	0.00	0.26	0.00	0.02	0.00	1.66	0.00	4.01	121.77
Jan-2036	0.00	0.00	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Feb-2036	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2036	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2036	0.00	0.00	0.28	1.33	0.00	5.76	0.00	8.27	8.27	99.63	0.00
May-2036	0.00	11.41	0.87	1.16	0.00	0.50	0.00	0.00	0.00	3.27	118.04
Jun-2036	0.00	0.00	1.21	1.38	0.00	6.96	0.00	1.82	0.00	49.56	0.00
Jul-2036	0.00	0.00	1.49	1.23	0.00	7.90	0.00	3.38	0.00	58.11	0.00
Aug-2036	0.00	0.00	1.04	0.82	0.00	4.22	0.00	3.11	0.00	32.82	0.00
Sep-2036	0.00	0.00	0.32	0.38	0.00	0.75	0.00	7.79	0.00	21.70	0.00
Oct-2036	0.00	0.00	0.14	0.44	0.00	2.20	0.00	8.27	8.27	67.86	0.00
Nov-2036	4.28	0.00	0.07	0.85	14.18	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2036	3.57	0.00	1.86	0.53	55.26	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2037	4.55	47.53	2.44	0.55	136.82	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2037	1.57	0.00	1.91	0.23	55.08	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2037	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.29	0.00	0.77	123.53
Apr-2037	0.01	0.01	0.18	2.26	0.00	0.06	0.00	0.00	0.00	0.41	123.71
May-2037	0.01	1.54	0.89	2.24	3.59	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2037	0.00	19.26	1.28	1.62	0.00	0.00	0.00	0.00	0.00	0.01	123.80
Jul-2037	0.00	13.32	1.43	1.47	0.00	5.63	0.00	0.00	0.00	37.97	0.00
Aug-2037	0.00	0.00	1.15	1.11	0.00	6.92	0.00	8.27	8.27	107.16	0.00
Sep-2037	0.01	47.53	0.30	0.55	58.92	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2037	0.00	4.60	0.12	0.43	0.00	0.03	0.00	0.00	0.00	0.18	120.53
Nov-2037	9.89	0.00	0.00	1.52	30.92	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2037	3.49	0.00	0.66	0.52	28.82	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2038	0.00	0.00	0.00	0.07	0.00	0.01	0.00	0.34	0.00	0.87	123.47
Feb-2038	0.20	0.00	0.00	0.09	0.66	0.00	0.00	0.00	0.00	0.00	123.98
Mar-2038	0.00	0.00	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2038	0.00	0.00	0.21	1.41	0.00	6.65	0.00	8.27	8.27	105.56	0.00
May-2038	0.00	6.18	0.72	1.22	0.00	3.98	0.00	0.00	0.00	25.90	0.00
Jun-2038	0.00	0.00	0.99	1.54	0.00	8.38	0.00	0.00	0.00	54.65	0.00
Jul-2038	0.00	0.00	1.16	1.47	0.00	9.33	3.36	0.00	0.00	76.59	0.00
Aug-2038	0.00	0.00	0.92	1.11	0.00	7.93	0.00	0.00	0.00	48.43	0.00
Sep-2038	0.00	0.00	0.20	0.38	0.00	1.28	0.00	7.79	0.00	24.08	0.00
Oct-2038	0.00	0.00	0.12	0.44	0.00	2.27	0.00	8.27	8.27	67.71	0.00
Nov-2038	12.02	47.53	2.44	1.47	149.70	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2038	11.71	47.53	2.44	1.32	160.84	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2039	1.71	0.00	0.00	0.28	5.75	0.00	0.00	0.00	0.00	0.00	123.98
Feb-2039	0.00	0.00	0.00	0.07	0.00	0.01	0.00	8.27	8.27	63.10	0.00
Mar-2039	0.58	0.00	1.57	0.13	41.02	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2039	0.00	9.65	0.56	1.57	0.00	2.59	0.00	0.00	0.00	17.48	0.00
May-2039	0.01	6.70	0.83	1.90	14.92	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2039	0.00	1.04	1.30	2.87	2.42	0.00	0.00	0.00	0.00	0.00	123.92
Jul-2039	0.00	0.00	1.34	1.47	0.00	7.52	0.00	8.27	2.93	76.76	0.00
Aug-2039	0.00	0.00	1.07	1.11	0.00	5.52	0.00	3.39	0.00	43.86	0.00
Sep-2039	0.00	2.17	0.26	0.38	0.00	0.02	0.00	0.00	0.00	0.13	118.47
Oct-2039	0.00	0.00	0.20	0.46	0.00	2.32	0.00	8.27	5.19	45.59	0.00
Nov-2039	0.00	0.00	0.00	0.38	0.00	0.83	0.00	8.27	8.27	63.30	0.00
Dec-2039	5.45	6.76	2.44	0.75	93.37	0.00	0.00	0.00	0.00	0.00	0.00

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Table B3- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

Plant Mode	Pumping , MW					Generation, MW					
Plant Name	TRR	Sac River	TC Canal	GCID Canal	Sites	TRR		Sac River		Sites	Pump Back
Installed Capacity, MW	19.36	47.53	2.44	2.87	179.70	9.33		8.27		123.98	123.98
Installed Capacity, cfs	1800	2000	2121	3000	5900	1500		1500		5100	5100
Date	All Hours					On-Peak	Off-Peak	On-Peak	Off-Peak	On-Peak	On-Peak
Jan-2010	1.91	19.874	2.44	0.28	97.47	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2010	1.57	24.849	2.44	0.23	107.01	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2010	0.01	0.000	0.05	0.07	0.00	0.16	0.00	8.27	8.27	60.66	0.00
Apr-2010	0.00	0.000	0.04	1.90	0.00	0.86	0.00	0.00	0.00	5.45	113.77
May-2010	0.00	0.000	0.86	1.20	0.00	5.78	0.00	0.80	0.00	38.43	0.00
Jun-2010	0.00	4.215	1.36	1.60	0.00	5.45	0.00	0.00	0.00	34.05	0.00
Jul-2010	0.00	0.000	1.46	1.47	0.00	7.23	0.00	8.27	2.65	66.81	0.00
Aug-2010	0.00	0.000	0.97	0.98	0.00	5.07	0.00	3.45	0.00	36.89	0.00
Sep-2010	0.00	2.172	0.31	0.38	0.00	0.01	0.00	0.00	0.00	0.03	106.74
Oct-2010	0.00	4.763	0.24	0.46	0.00	0.03	0.00	0.00	0.00	0.17	106.62
Nov-2010	9.25	32.356	2.44	1.27	133.29	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2010	5.06	0.000	0.48	0.75	27.90	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2011	2.10	26.023	2.44	0.30	113.76	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2011	0.00	0.000	0.00	0.07	0.00	0.01	0.00	0.43	0.00	1.08	123.34
Mar-2011	0.00	0.000	0.02	0.05	0.00	0.06	0.00	0.00	0.00	0.43	123.69
Apr-2011	0.01	0.440	0.82	2.71	1.03	0.00	0.00	0.00	0.00	0.00	123.98
May-2011	0.00	0.000	1.02	1.20	0.00	5.99	0.00	0.00	0.00	40.51	0.00
Jun-2011	0.00	0.000	1.20	1.48	0.00	7.18	0.00	4.81	0.00	58.95	0.00
Jul-2011	0.00	0.000	1.30	1.22	0.00	6.32	0.00	8.27	5.98	73.74	0.00
Aug-2011	0.00	0.000	1.04	0.90	0.00	4.49	0.00	6.26	0.00	42.03	0.00
Sep-2011	0.00	0.000	0.25	0.38	0.00	0.73	0.00	7.79	0.00	21.84	0.00
Oct-2011	0.00	0.000	0.22	0.46	0.00	2.35	0.00	8.27	8.27	71.74	0.00
Nov-2011	5.00	0.000	2.37	0.83	72.23	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2011	4.22	0.000	1.78	0.63	57.66	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2012	1.91	21.950	2.44	0.28	108.61	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2012	0.00	0.000	0.00	0.07	0.00	0.01	0.00	0.26	0.00	0.67	123.57
Mar-2012	0.13	0.000	0.00	0.03	0.45	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2012	0.00	0.000	0.05	1.09	0.00	0.07	0.00	0.00	0.00	0.47	123.71
May-2012	0.01	1.323	0.73	2.15	3.09	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2012	0.01	1.536	1.08	2.55	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2012	0.00	19.810	1.57	1.47	0.00	0.01	0.00	8.27	2.93	26.69	0.00
Aug-2012	0.01	17.982	1.25	2.10	27.62	0.00	0.00	3.46	0.00	0.00	0.00
Sep-2012	0.01	9.122	0.34	0.56	2.80	0.00	0.00	8.27	1.88	0.00	123.98
Oct-2012	0.00	4.740	0.23	0.46	0.00	0.03	0.00	0.00	0.00	0.19	123.83
Nov-2012	0.00	1.341	0.00	0.38	0.00	0.11	0.00	0.00	0.00	0.72	123.57
Dec-2012	0.00	0.000	0.00	0.26	0.00	0.02	0.00	1.66	0.00	4.01	121.77
Jan-2013	0.00	0.000	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Feb-2013	0.00	0.000	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2013	0.00	0.000	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2013	0.00	0.000	0.28	1.33	0.00	5.76	0.00	8.27	8.27	99.63	0.00
May-2013	0.00	11.410	0.87	1.16	0.00	0.50	0.00	0.00	0.00	3.27	118.04
Jun-2013	0.00	0.000	1.21	1.38	0.00	6.96	0.00	1.82	0.00	49.56	0.00
Jul-2013	0.00	0.000	1.49	1.23	0.00	7.90	0.00	3.38	0.00	58.11	0.00
Aug-2013	0.00	0.000	1.04	0.82	0.00	4.06	0.00	3.00	0.00	31.60	0.00
Sep-2013	0.00	0.000	0.32	0.38	0.00	0.78	0.00	8.10	0.00	22.57	0.00
Oct-2013	0.00	0.000	0.14	0.44	0.00	2.20	0.00	8.27	8.27	67.86	0.00
Nov-2013	4.28	0.000	0.07	0.85	14.18	0.00	0.00	0.00	0.00	0.00	0.00

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Table B3 (Cont.)- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

Dec-2013	3.57	0.000	1.86	0.53	55.26	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2014	4.55	47.533	2.44	0.55	136.82	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2014	1.57	0.000	1.91	0.23	55.08	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2014	0.00	0.000	0.00	0.02	0.00	0.01	0.00	0.29	0.00	0.77	123.53
Apr-2014	0.01	0.012	0.18	2.26	0.00	0.06	0.00	0.00	0.00	0.41	123.71
May-2014	0.01	1.540	0.89	2.24	3.59	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2014	0.00	19.258	1.28	1.62	0.00	0.00	0.00	0.00	0.00	0.01	123.80
Jul-2014	0.00	13.321	1.43	1.47	0.00	5.63	0.00	0.00	0.00	37.97	0.00
Aug-2014	0.00	0.000	1.15	1.11	0.00	6.92	0.00	8.27	8.27	107.16	0.00
Sep-2014	0.01	47.533	0.30	0.55	58.92	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2014	0.00	4.600	0.12	0.43	0.00	0.03	0.00	0.00	0.00	0.18	120.53
Nov-2014	9.89	0.000	0.00	1.52	30.92	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2014	3.49	0.000	0.66	0.52	28.82	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2015	0.00	0.000	0.00	0.07	0.00	0.01	0.00	0.33	0.00	0.84	123.47
Feb-2015	0.20	0.000	0.00	0.09	0.66	0.00	0.00	0.00	0.00	0.00	123.98
Mar-2015	0.00	0.000	0.00	0.02	0.00	0.01	0.00	0.00	0.00	0.08	123.93
Apr-2015	0.00	0.000	0.21	1.41	0.00	6.65	0.00	8.27	8.27	105.56	0.00
May-2015	0.00	6.177	0.72	1.22	0.00	3.98	0.00	0.00	0.00	25.90	0.00
Jun-2015	0.00	0.000	0.99	1.54	0.00	8.38	0.00	0.00	0.00	54.65	0.00
Jul-2015	0.00	0.000	1.16	1.47	0.00	9.33	3.36	0.00	0.00	76.59	0.00
Aug-2015	0.00	0.000	0.92	1.11	0.00	7.93	0.00	0.00	0.00	48.43	0.00
Sep-2015	0.00	0.000	0.20	0.38	0.00	1.28	0.00	7.79	0.00	24.08	0.00
Oct-2015	0.00	0.000	0.12	0.44	0.00	2.19	0.00	8.27	8.27	65.20	0.00
Nov-2015	12.02	47.533	2.44	1.47	149.70	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2015	11.71	47.533	2.44	1.32	160.84	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2016	1.71	0.000	0.00	0.28	5.75	0.00	0.00	0.00	0.00	0.00	123.98
Feb-2016	0.00	0.000	0.00	0.07	0.00	0.01	0.00	8.27	7.60	60.58	0.00
Mar-2016	0.58	0.000	1.57	0.13	41.02	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2016	0.00	9.655	0.56	1.57	0.00	2.59	0.00	0.00	0.00	17.48	0.00
May-2016	0.01	6.701	0.83	1.90	14.92	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2016	0.00	1.038	1.30	2.87	2.42	0.00	0.00	0.00	0.00	0.00	123.92
Jul-2016	0.00	0.000	1.34	1.47	0.00	7.52	0.00	8.27	2.93	76.76	0.00
Aug-2016	0.00	0.000	1.07	1.11	0.00	5.52	0.00	3.39	0.00	43.86	0.00
Sep-2016	0.00	2.172	0.26	0.38	0.00	0.02	0.00	0.00	0.00	0.13	118.47
Oct-2016	0.00	0.000	0.20	0.46	0.00	2.32	0.00	8.27	5.19	45.59	0.00
Nov-2016	0.00	0.000	0.00	0.38	0.00	0.83	0.00	8.27	8.27	63.30	0.00
Dec-2016	5.45	6.761	2.44	0.75	93.37	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2017	4.67	1.112	2.44	0.61	81.74	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2017	0.01	0.000	0.00	0.06	0.00	0.01	0.00	0.97	0.00	2.29	122.66
Mar-2017	0.01	0.000	0.36	0.15	0.00	0.28	0.00	0.00	0.00	1.91	122.74
Apr-2017	0.00	0.000	0.46	1.47	0.00	7.49	0.00	7.45	0.00	68.30	0.00
May-2017	0.00	9.174	0.83	1.16	0.00	2.19	0.00	0.00	0.00	14.41	0.00
Jun-2017	0.00	0.000	0.98	1.45	0.00	7.77	0.00	0.92	0.00	53.47	0.00
Jul-2017	0.00	0.000	1.11	1.23	0.00	9.33	1.86	8.27	8.27	128.14	0.00
Aug-2017	0.00	0.000	0.89	0.90	0.00	6.31	0.00	3.00	0.00	44.43	0.00
Sep-2017	0.00	0.000	0.09	0.38	0.00	0.74	0.00	7.79	0.00	20.92	0.00
Oct-2017	0.00	4.385	0.05	0.41	0.00	0.03	0.00	0.00	0.00	0.19	107.78
Nov-2017	5.19	0.000	1.99	0.86	62.84	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2017	7.74	30.807	2.44	1.01	133.16	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2018	1.91	0.000	2.07	0.28	60.46	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2018	0.00	0.000	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2018	0.00	0.000	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	123.98
Apr-2018	0.00	0.000	0.18	1.25	0.00	5.59	0.00	0.00	0.00	37.81	0.00

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Table B3 (Cont.)- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

May-2018	0.01	14.244	1.03	2.18	28.19	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2018	0.00	0.000	1.34	1.48	0.00	7.22	0.00	0.42	0.00	49.98	0.00
Jul-2018	0.00	0.000	1.46	1.23	0.00	6.36	0.00	8.27	9.40	92.57	0.00
Aug-2018	0.00	0.000	1.17	0.90	0.00	5.66	0.00	3.00	0.00	42.77	0.00
Sep-2018	0.00	0.000	0.29	0.38	0.00	0.71	0.00	8.10	0.00	22.73	0.00
Oct-2018	0.00	4.492	0.07	0.42	0.00	0.03	0.00	0.00	0.00	0.17	114.41
Nov-2018	16.16	47.533	2.44	1.80	172.50	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2018	0.00	0.000	0.00	0.19	0.00	0.02	0.00	8.27	6.45	36.45	0.00
Jan-2019	1.91	0.000	0.62	0.28	22.69	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2019	0.00	0.000	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2019	0.00	0.000	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	123.98
Apr-2019	0.00	0.000	0.05	1.94	0.00	0.06	0.00	0.00	0.00	0.39	123.75
May-2019	0.00	0.000	0.87	1.21	0.00	5.49	0.00	7.75	0.00	55.43	0.00
Jun-2019	0.00	3.101	1.43	1.59	0.00	6.19	0.00	0.00	0.00	41.03	0.00
Jul-2019	0.00	0.000	1.33	1.33	0.00	9.33	0.97	0.00	0.00	66.73	0.00
Aug-2019	0.00	0.000	1.24	1.11	0.00	6.65	0.00	0.00	0.00	42.28	0.00
Sep-2019	0.00	2.172	0.34	0.38	0.00	0.02	0.00	0.00	0.00	0.13	114.25
Oct-2019	0.00	4.546	0.11	0.43	0.00	0.03	0.00	0.00	0.00	0.17	114.18
Nov-2019	0.00	1.742	0.00	0.38	0.00	0.05	0.00	0.00	0.00	0.29	114.18
Dec-2019	3.76	0.000	1.18	0.56	40.96	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2020	1.37	0.000	1.15	0.28	33.16	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2020	1.57	15.619	2.44	0.23	99.24	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2020	0.00	0.000	0.00	0.02	0.00	0.00	0.00	0.27	0.00	0.64	123.61
Apr-2020	0.00	0.196	0.05	2.05	0.46	0.00	0.00	0.00	0.00	0.00	123.98
May-2020	0.01	1.188	1.04	2.21	2.77	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2020	0.00	7.331	1.41	1.61	0.00	4.14	0.00	0.00	0.00	27.90	0.00
Jul-2020	0.00	0.000	1.45	1.44	0.00	7.11	0.00	8.27	2.65	72.29	0.00
Aug-2020	0.01	17.060	1.17	2.07	25.81	0.00	0.00	3.53	0.00	0.00	0.00
Sep-2020	0.00	2.172	0.32	0.38	0.00	0.02	0.00	8.27	2.69	25.26	0.00
Oct-2020	0.00	44.751	0.07	0.71	58.10	0.00	0.00	0.00	0.00	0.00	0.00
Nov-2020	0.00	1.988	0.00	0.38	0.00	0.07	0.00	0.00	0.00	0.45	122.66
Dec-2020	0.00	0.000	0.00	0.28	0.00	0.02	0.00	0.18	0.00	0.54	122.72
Jan-2021	0.00	0.000	0.00	0.14	0.00	0.01	0.00	0.00	0.00	0.07	122.99
Feb-2021	0.01	0.000	0.07	0.10	0.00	0.08	0.00	0.00	0.00	0.51	122.73
Mar-2021	0.00	0.000	0.25	0.11	0.00	2.22	0.00	0.00	0.00	14.84	0.00
Apr-2021	0.00	0.000	0.36	1.42	0.00	8.60	0.00	4.79	0.00	68.90	0.00
May-2021	0.00	0.000	0.25	1.22	0.00	6.40	0.00	2.63	0.00	47.57	0.00
Jun-2021	0.00	0.000	0.28	1.47	0.00	7.16	0.00	8.27	0.04	64.48	0.00
Jul-2021	0.00	0.000	0.31	1.23	0.00	9.33	0.43	8.27	8.27	113.92	0.00
Aug-2021	0.01	0.000	0.23	1.60	0.00	1.08	0.00	8.27	8.27	61.19	0.00
Sep-2021	0.01	0.000	0.10	0.47	0.00	0.00	0.00	8.27	9.03	48.45	0.00
Oct-2021	0.00	0.528	0.10	0.78	1.01	0.00	0.00	0.00	0.00	0.00	100.87
Nov-2021	0.00	1.866	0.00	0.38	0.00	0.06	0.00	0.00	0.00	0.31	100.76
Dec-2021	0.00	0.000	0.00	0.27	0.00	0.02	0.00	8.27	8.27	49.84	0.00
Jan-2022	0.00	0.000	0.00	0.07	0.00	0.01	0.00	0.00	0.00	0.06	97.53
Feb-2022	0.00	0.000	0.01	0.08	0.00	0.10	0.00	8.27	8.27	49.31	0.00
Mar-2022	0.00	0.000	0.05	0.09	0.00	0.00	0.00	5.35	0.00	9.64	0.00
Apr-2022	0.00	0.000	0.07	1.26	0.00	5.76	0.00	8.27	6.45	54.03	0.00
May-2022	0.00	8.414	0.05	0.76	0.00	0.00	0.00	0.00	0.00	0.00	88.86
Jun-2022	0.01	0.303	0.08	0.99	0.51	0.00	0.00	0.00	0.00	0.00	88.71
Jul-2022	0.01	0.000	0.09	1.16	0.00	0.00	0.00	8.27	8.27	44.72	0.00
Aug-2022	0.01	0.000	0.07	0.81	0.00	0.00	0.00	8.27	7.82	26.58	0.00
Sep-2022	0.01	0.000	0.02	0.29	0.00	0.00	0.00	8.27	8.63	38.65	0.00

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Table B3 (Cont.)- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

Oct-2022	0.00	0.610	0.07	0.57	0.89	0.00	0.00	0.00	0.00	0.00	77.38
Nov-2022	0.00	0.000	0.00	0.32	0.00	0.00	0.00	8.27	8.23	25.55	0.00
Dec-2022	3.11	0.000	1.92	0.46	39.46	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2023	1.52	0.000	0.96	0.22	20.39	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2023	3.12	47.533	2.44	0.38	102.59	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2023	1.17	47.533	2.44	0.14	107.83	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2023	0.01	47.533	0.03	1.70	52.83	0.00	0.00	0.00	0.00	0.00	0.00
May-2023	0.00	0.000	0.78	1.20	0.00	5.34	0.00	4.50	0.00	40.19	0.00
Jun-2023	0.00	0.000	1.43	1.48	0.00	7.00	0.00	8.27	9.21	78.26	0.00
Jul-2023	0.00	0.000	1.56	1.23	0.00	9.33	0.87	8.27	0.15	69.91	0.00
Aug-2023	0.00	0.000	1.01	0.91	0.00	6.82	0.00	3.00	0.00	39.98	0.00
Sep-2023	0.01	12.354	0.22	0.46	19.05	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2023	0.00	0.000	0.10	0.47	0.00	3.20	0.00	8.27	8.27	62.21	0.00
Nov-2023	3.89	0.000	0.21	0.87	13.37	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2023	0.00	0.000	0.00	0.28	0.00	0.02	0.00	8.27	5.45	23.97	0.00
Jan-2024	4.55	47.533	2.44	0.55	112.44	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2024	4.15	47.533	2.44	0.50	121.48	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2024	1.30	47.533	2.44	0.16	121.59	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2024	0.01	0.011	0.29	2.14	0.00	1.01	0.00	0.00	0.00	6.40	113.01
May-2024	0.01	23.019	0.63	2.17	37.98	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2024	0.00	0.000	0.82	1.49	0.00	9.33	1.17	0.41	0.00	68.49	0.00
Jul-2024	0.00	0.000	0.90	1.23	0.00	8.54	0.00	8.27	5.87	83.74	0.00
Aug-2024	0.00	0.000	0.71	0.90	0.00	5.65	0.00	4.97	0.00	44.24	0.00
Sep-2024	0.01	0.000	0.08	0.50	0.00	0.00	0.00	8.27	8.67	54.39	0.00
Oct-2024	0.00	0.000	0.06	0.42	0.00	2.14	0.00	8.27	9.43	53.74	0.00
Nov-2024	7.29	0.000	2.23	1.15	71.31	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2024	3.49	0.000	1.87	0.52	54.65	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2025	4.55	47.533	2.44	0.55	135.63	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2025	1.52	2.250	2.44	0.23	73.94	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2025	0.00	0.000	0.00	0.02	0.00	0.00	0.00	0.29	0.00	0.71	123.57
Apr-2025	0.00	12.339	0.13	1.20	0.00	0.00	0.00	0.00	0.00	0.01	123.95
May-2025	0.01	1.401	0.94	2.08	3.27	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2025	0.00	0.000	1.26	1.44	0.00	7.04	0.00	7.18	0.00	64.53	0.00
Jul-2025	0.00	0.000	1.47	1.22	0.00	9.33	0.35	8.27	9.32	109.40	0.00
Aug-2025	0.00	0.000	1.19	0.91	0.00	5.89	0.00	8.27	5.14	66.55	0.00
Sep-2025	0.00	0.000	0.29	0.51	0.00	0.13	0.00	8.27	9.27	51.99	0.00
Oct-2025	0.00	0.000	0.22	0.46	0.00	2.25	0.00	8.27	9.02	53.38	0.00
Nov-2025	0.00	0.000	0.01	0.38	0.00	1.14	0.00	8.27	8.27	61.69	0.00
Dec-2025	6.72	47.533	2.44	0.88	134.81	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2026	4.55	47.533	2.44	0.55	137.51	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2026	1.57	0.000	0.00	0.23	5.23	0.00	0.00	0.00	0.00	0.00	122.25
Mar-2026	0.54	0.000	1.21	0.08	33.45	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2026	0.01	0.012	0.37	1.96	0.00	0.00	0.00	0.00	0.00	0.00	123.98
May-2026	0.00	0.000	0.95	1.16	0.00	5.46	0.00	1.03	0.00	39.22	0.00
Jun-2026	0.00	0.000	1.42	1.49	0.00	7.23	0.00	8.15	0.00	67.46	0.00
Jul-2026	0.00	0.000	1.56	1.23	0.00	9.33	0.44	3.38	0.00	71.07	0.00
Aug-2026	0.00	0.000	1.24	0.91	0.00	4.70	0.00	6.45	0.00	43.64	0.00
Sep-2026	0.00	0.000	0.28	0.38	0.00	0.63	0.00	8.27	0.43	23.14	0.00
Oct-2026	0.00	0.000	0.05	0.41	0.00	2.10	0.00	8.27	8.27	67.89	0.00
Nov-2026	7.88	30.332	2.44	1.12	129.36	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2026	4.92	22.251	2.44	0.69	118.92	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2027	0.00	0.000	0.00	0.07	0.00	0.01	0.00	0.24	0.00	0.63	123.61
Feb-2027	0.14	0.000	0.00	0.08	0.48	0.00	0.00	0.00	0.00	0.00	123.98

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Table B3 (Cont.)- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

Mar-2027	0.00	0.000	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.01	123.98
Apr-2027	0.00	0.000	0.05	1.44	0.00	0.07	0.00	0.00	0.00	0.44	123.71
May-2027	0.01	1.321	0.77	2.16	3.08	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2027	0.00	15.272	1.24	1.49	0.00	1.19	0.00	0.00	0.00	8.00	118.97
Jul-2027	0.01	0.000	1.58	2.78	0.00	3.67	0.00	8.27	8.27	85.12	0.00
Aug-2027	0.00	6.612	1.26	1.11	0.00	2.66	0.00	3.52	0.00	25.21	0.00
Sep-2027	0.01	47.533	0.10	0.48	59.42	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2027	0.00	27.280	0.06	0.69	44.14	0.00	0.00	0.00	0.00	0.00	0.00
Nov-2027	0.00	0.000	0.00	0.33	0.00	0.02	0.00	0.80	0.00	2.01	122.84
Dec-2027	0.00	0.000	0.00	0.21	0.00	0.02	0.00	1.59	0.00	3.86	121.77
Jan-2028	0.00	0.000	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Feb-2028	0.00	0.000	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2028	0.01	0.000	0.00	0.02	0.03	0.00	0.00	0.00	0.00	0.00	123.98
Apr-2028	0.00	0.000	0.03	1.32	0.00	0.09	0.00	0.00	0.00	0.61	123.63
May-2028	0.01	1.362	0.66	2.03	3.18	0.00	0.00	0.00	0.00	0.00	123.98
Jun-2028	0.00	1.536	1.37	2.87	3.58	0.00	0.00	0.00	0.00	0.00	123.98
Jul-2028	0.01	11.287	1.59	2.78	4.86	0.00	0.00	8.27	2.93	0.00	123.98
Aug-2028	0.00	13.174	1.22	1.09	0.00	3.28	0.00	0.00	0.00	22.09	0.00
Sep-2028	0.01	11.414	0.25	0.53	23.67	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2028	0.00	4.654	0.19	0.45	0.00	0.03	0.00	0.00	0.00	0.20	123.83
Nov-2028	0.00	0.000	0.00	0.29	0.00	0.02	0.00	0.29	0.00	0.81	123.52
Dec-2028	0.00	0.000	0.00	0.15	0.00	0.02	0.00	1.66	0.00	4.01	121.77
Jan-2029	0.00	0.000	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Feb-2029	0.00	0.000	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Mar-2029	0.01	0.000	0.03	0.06	0.00	0.07	0.00	0.00	0.00	0.49	123.68
Apr-2029	0.00	0.000	0.50	1.53	0.00	6.84	0.00	8.27	9.14	104.29	0.00
May-2029	0.00	13.166	0.90	1.21	0.00	0.34	0.00	0.00	0.00	2.23	118.63
Jun-2029	0.00	0.000	1.07	1.59	0.00	8.38	0.00	0.00	0.00	55.24	0.00
Jul-2029	0.00	0.000	1.35	1.47	0.00	9.33	0.08	0.00	0.00	60.64	0.00
Aug-2029	0.00	0.000	1.00	1.06	0.00	5.27	0.00	0.00	0.00	32.68	0.00
Sep-2029	0.00	0.000	0.26	0.38	0.00	1.07	0.00	0.00	0.00	6.55	108.38
Oct-2029	0.00	0.000	0.09	0.43	0.00	2.16	0.00	0.00	0.00	13.14	0.00
Nov-2029	19.36	47.533	2.44	2.01	176.39	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2029	5.61	0.000	0.88	0.83	41.50	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2030	0.00	0.000	0.00	0.12	0.00	0.01	0.00	0.35	0.00	0.89	123.44
Feb-2030	0.21	0.000	0.00	0.09	0.71	0.00	0.00	0.00	0.00	0.00	123.98
Mar-2030	0.00	0.000	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	123.97
Apr-2030	0.00	1.238	0.27	1.30	0.00	5.15	0.00	0.00	0.00	34.82	0.00
May-2030	0.00	0.000	1.00	1.22	0.00	6.05	0.00	7.75	0.00	58.61	0.00
Jun-2030	0.00	0.000	1.23	1.48	0.00	7.98	0.00	0.57	0.00	53.81	0.00
Jul-2030	0.00	0.000	1.34	1.23	0.00	9.33	1.09	3.38	0.00	73.21	0.00
Aug-2030	0.00	0.000	1.06	0.90	0.00	6.02	0.00	3.00	0.00	43.59	0.00
Sep-2030	0.00	0.000	0.34	0.38	0.00	0.54	0.00	8.27	0.85	22.93	0.00
Oct-2030	0.00	0.000	0.18	0.45	0.00	2.29	0.00	8.27	8.27	67.51	0.00
Nov-2030	0.00	0.000	0.00	0.36	0.00	0.00	0.00	8.27	8.27	52.90	0.00
Dec-2030	4.98	0.000	1.69	0.74	52.68	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2031	1.91	19.874	2.44	0.28	98.31	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2031	4.15	47.533	2.44	0.50	136.23	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2031	0.54	0.000	1.39	0.08	37.96	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2031	0.01	0.012	0.29	2.04	0.00	0.50	0.00	0.00	0.00	3.36	121.96
May-2031	0.00	0.571	0.75	1.20	0.00	6.31	0.00	0.00	0.00	42.70	0.00
Jun-2031	0.00	0.000	1.09	1.61	0.00	9.33	0.00	0.00	0.00	62.89	0.00
Jul-2031	0.00	0.000	1.14	1.47	0.00	9.33	4.03	4.86	0.00	93.04	0.00

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Table B3 (Cont.)- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

Aug-2031	0.00	0.000	0.91	1.11	0.00	5.75	0.00	8.27	8.45	92.36	0.00
Sep-2031	2.21	0.000	0.08	0.75	6.60	0.00	0.00	0.00	0.00	0.00	0.00
Oct-2031	0.00	4.740	0.19	0.46	0.00	0.27	0.00	0.00	0.00	1.64	109.32
Nov-2031	0.00	0.000	0.01	0.38	0.00	1.19	0.00	8.27	6.22	38.57	0.00
Dec-2031	5.99	0.000	1.17	0.88	45.33	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2032	1.91	13.530	2.44	0.28	92.51	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2032	1.57	0.000	1.25	0.23	36.56	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2032	0.54	5.158	2.44	0.08	77.10	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2032	0.00	0.000	0.48	1.29	0.00	6.97	0.00	8.27	8.27	107.67	0.00
May-2032	0.00	0.000	0.66	1.20	0.00	8.08	0.00	0.00	0.00	53.06	0.00
Jun-2032	0.00	0.000	0.78	1.49	0.00	9.01	0.00	0.47	0.00	59.27	0.00
Jul-2032	0.00	0.000	0.85	1.23	0.00	6.12	0.00	8.27	9.30	80.70	0.00
Aug-2032	0.00	0.000	0.68	0.90	0.00	4.69	0.00	6.44	0.00	41.15	0.00
Sep-2032	0.01	0.000	0.31	0.51	0.00	0.00	0.00	8.27	8.27	53.37	0.00
Oct-2032	0.00	0.000	0.11	0.44	0.00	2.27	0.00	8.27	8.27	65.26	0.00
Nov-2032	0.00	0.000	0.00	0.42	0.00	0.00	0.00	8.27	8.27	49.48	0.00
Dec-2032	3.75	0.000	1.84	0.55	49.61	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2033	1.91	0.000	0.91	0.28	25.33	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2033	0.00	0.000	0.00	0.06	0.00	0.01	0.00	8.27	8.10	33.64	0.00
Mar-2033	0.00	0.000	0.07	0.03	0.00	0.52	0.00	8.27	8.27	52.79	0.00
Apr-2033	0.00	0.000	0.35	1.30	0.00	7.34	0.00	7.10	0.00	51.75	0.00
May-2033	0.00	12.282	0.09	1.07	0.00	1.86	0.00	0.00	0.00	9.48	0.00
Jun-2033	0.00	0.000	0.12	1.40	0.00	6.79	0.00	8.27	1.33	50.25	0.00
Jul-2033	0.01	0.389	0.15	2.25	0.00	0.00	0.00	2.39	0.00	3.08	86.83
Aug-2033	0.00	0.000	0.12	0.87	0.00	4.32	0.00	8.27	8.27	61.54	0.00
Sep-2033	0.01	0.000	0.05	0.50	0.00	0.00	0.00	8.27	8.27	40.03	0.00
Oct-2033	0.00	0.000	0.08	0.79	0.00	0.00	0.00	8.27	5.19	20.11	0.00
Nov-2033	0.00	0.000	2.34	0.42	39.88	0.00	0.00	0.00	0.00	0.00	0.00
Dec-2033	4.86	7.545	1.06	0.71	42.63	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2034	1.46	0.000	0.97	0.29	21.93	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2034	1.68	0.000	0.00	0.26	4.11	0.00	0.00	0.00	0.00	0.00	90.17
Mar-2034	0.57	0.000	0.51	0.08	11.17	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2034	0.01	47.533	0.33	2.18	47.10	0.00	0.00	0.00	0.00	0.00	0.00
May-2034	0.00	0.000	0.39	1.21	0.00	8.95	0.00	7.75	0.00	60.09	0.00
Jun-2034	0.00	0.000	0.62	1.43	0.00	8.93	0.00	1.22	0.00	45.96	0.00
Jul-2034	0.00	0.000	0.72	1.23	0.00	6.36	0.00	3.51	0.00	35.09	0.00
Aug-2034	0.00	0.000	0.57	0.90	0.00	4.48	0.00	3.00	0.00	24.57	0.00
Sep-2034	0.00	0.000	0.03	0.30	3.22	0.00	0.00	0.00	0.00	0.00	81.18
Oct-2034	0.00	4.515	0.06	0.43	0.00	0.03	0.00	0.00	0.00	0.13	81.06
Nov-2034	0.00	0.000	0.00	0.38	0.00	0.85	0.00	8.27	8.27	42.91	0.00
Dec-2034	0.00	0.000	0.00	0.30	0.00	0.02	0.00	8.27	8.27	38.47	0.00
Jan-2035	2.02	19.413	2.44	0.29	70.74	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2035	1.57	0.000	0.00	0.23	3.56	0.00	0.00	0.00	0.00	0.00	82.93
Mar-2035	0.00	0.000	0.05	0.02	0.00	0.69	0.00	0.00	0.00	3.14	80.84
Apr-2035	0.00	0.000	0.06	1.24	0.00	7.57	0.00	8.27	8.27	71.80	0.00
May-2035	0.01	47.533	0.04	1.34	39.57	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2035	0.00	0.000	0.08	1.13	0.00	5.54	0.00	5.23	0.00	31.51	0.00
Jul-2035	0.00	0.000	0.08	0.86	0.00	5.78	0.00	8.27	8.27	59.36	0.00
Aug-2035	0.01	0.747	0.06	1.17	0.00	0.60	0.00	0.00	0.00	2.27	68.08
Sep-2035	0.01	0.000	0.03	0.08	0.00	0.00	0.00	8.27	5.21	17.91	0.00
Oct-2035	0.01	0.244	0.01	0.80	0.31	0.00	0.00	0.00	0.00	0.00	67.01
Nov-2035	0.00	0.000	0.00	0.38	0.00	0.76	0.00	1.88	0.00	5.16	0.00
Dec-2035	0.00	0.000	0.00	0.26	0.00	0.00	0.00	8.27	8.64	23.51	0.00

Table B3 (Cont.)- NODOS Project- CALSIM Model – Low Case, 30-year Planning Period

Jan-2036	0.00	0.000	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	63.17
Feb-2036	0.00	0.000	0.01	0.07	0.00	0.09	0.00	0.00	0.00	0.29	62.96
Mar-2036	0.43	0.000	0.52	0.06	7.93	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2036	0.00	0.000	0.17	0.84	0.00	4.20	0.00	0.00	0.00	14.51	0.00
May-2036	0.00	1.111	0.24	0.91	0.00	3.56	0.00	0.00	0.00	11.91	0.00
Jun-2036	0.00	0.000	0.33	0.97	0.00	4.95	0.00	2.37	0.00	18.41	0.00
Jul-2036	0.01	0.897	0.38	1.46	0.98	0.00	0.00	0.00	0.00	0.00	57.80
Aug-2036	0.01	0.498	0.31	0.87	0.55	0.00	0.00	0.00	0.00	0.00	57.80
Sep-2036	0.00	0.343	0.14	0.00	0.38	0.00	0.00	0.00	0.00	0.00	57.80
Oct-2036	0.00	3.710	0.09	0.32	0.00	0.00	0.00	0.00	0.00	0.00	57.77
Nov-2036	0.00	1.525	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	57.82
Dec-2036	0.00	0.000	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.00	57.90
Jan-2037	0.00	0.000	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	57.90
Feb-2037	1.22	0.000	1.00	0.18	14.96	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2037	0.43	0.000	0.00	0.06	0.72	0.00	0.00	0.00	0.00	0.00	61.12
Apr-2037	0.00	0.000	0.23	0.90	0.00	4.09	0.00	0.00	0.00	13.34	0.00
May-2037	0.01	0.305	0.44	1.72	0.34	0.00	0.00	0.00	0.00	0.00	59.03
Jun-2037	0.01	0.394	0.70	1.93	0.44	0.00	0.00	0.00	0.00	0.00	59.01
Jul-2037	0.01	0.534	0.88	1.70	0.60	0.00	0.00	0.00	0.00	0.00	58.99
Aug-2037	0.01	0.458	0.70	1.24	0.51	0.00	0.00	0.00	0.00	0.00	58.96
Sep-2037	0.01	0.316	0.10	0.00	0.35	0.00	0.00	0.00	0.00	0.00	58.95
Oct-2037	0.00	0.000	0.00	0.29	0.00	1.71	0.00	1.34	0.00	6.89	0.00
Nov-2037	0.00	1.515	0.00	0.29	0.00	0.00	0.00	0.00	0.00	0.00	57.82
Dec-2037	0.00	0.000	0.00	0.11	0.01	0.00	0.00	0.00	0.00	0.00	57.91
Jan-2038	1.52	0.000	0.96	0.22	15.01	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2038	3.12	47.533	2.44	0.38	80.75	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2038	1.17	47.533	2.44	0.14	89.14	0.00	0.00	0.00	0.00	0.00	0.00
Apr-2038	0.01	47.533	0.52	2.17	44.45	0.00	0.00	0.00	0.00	0.00	0.00
May-2038	0.01	47.533	0.60	1.75	46.81	0.00	0.00	0.00	0.00	0.00	0.00
Jun-2038	0.01	47.533	1.16	2.46	48.95	0.00	0.00	0.00	0.00	0.00	0.00
Jul-2038	0.00	0.000	1.58	1.23	0.00	6.13	0.00	8.27	5.87	58.52	0.00
Aug-2038	0.00	0.000	1.26	0.91	0.00	5.89	0.00	3.12	0.00	35.65	0.00
Sep-2038	0.00	0.000	0.34	0.51	0.00	0.13	0.00	8.27	8.27	46.00	0.00
Oct-2038	0.00	0.000	0.18	0.44	0.00	2.21	0.00	8.27	8.24	40.26	0.00
Nov-2038	0.00	0.000	0.00	0.38	0.00	0.44	0.00	8.27	1.18	17.33	0.00
Dec-2038	5.56	0.000	2.28	0.83	57.00	0.00	0.00	0.00	0.00	0.00	0.00
Jan-2039	1.91	0.000	0.61	0.28	16.57	0.00	0.00	0.00	0.00	0.00	0.00
Feb-2039	1.57	0.000	1.25	0.23	29.06	0.00	0.00	0.00	0.00	0.00	0.00
Mar-2039	0.00	0.000	0.03	0.04	0.00	0.00	0.00	8.27	8.27	46.59	0.00
Apr-2039	0.00	0.000	0.60	1.12	0.00	6.18	0.00	8.27	8.27	72.58	0.00
May-2039	0.00	0.557	0.68	0.71	0.00	4.30	0.00	0.00	0.00	19.61	0.00
Jun-2039	0.00	0.000	1.01	1.16	0.00	6.94	0.00	8.27	0.82	44.17	0.00
Jul-2039	0.00	0.000	0.99	0.81	0.00	7.53	0.00	8.27	8.27	66.49	0.00
Aug-2039	0.00	9.708	1.18	0.44	0.00	0.00	0.00	8.27	2.65	14.24	0.00
Sep-2039	0.00	1.033	0.39	0.29	0.00	0.00	0.00	3.15	0.00	4.04	64.95
Oct-2039	0.00	4.217	0.05	0.29	0.00	0.37	0.00	0.00	0.00	1.35	66.28
Nov-2039	0.00	0.000	0.02	0.24	0.00	0.00	0.00	8.27	8.07	21.59	0.00
Dec-2039	3.06	0.000	1.93	0.47	34.55	0.00	0.00	0.00	0.00	0.00	0.00

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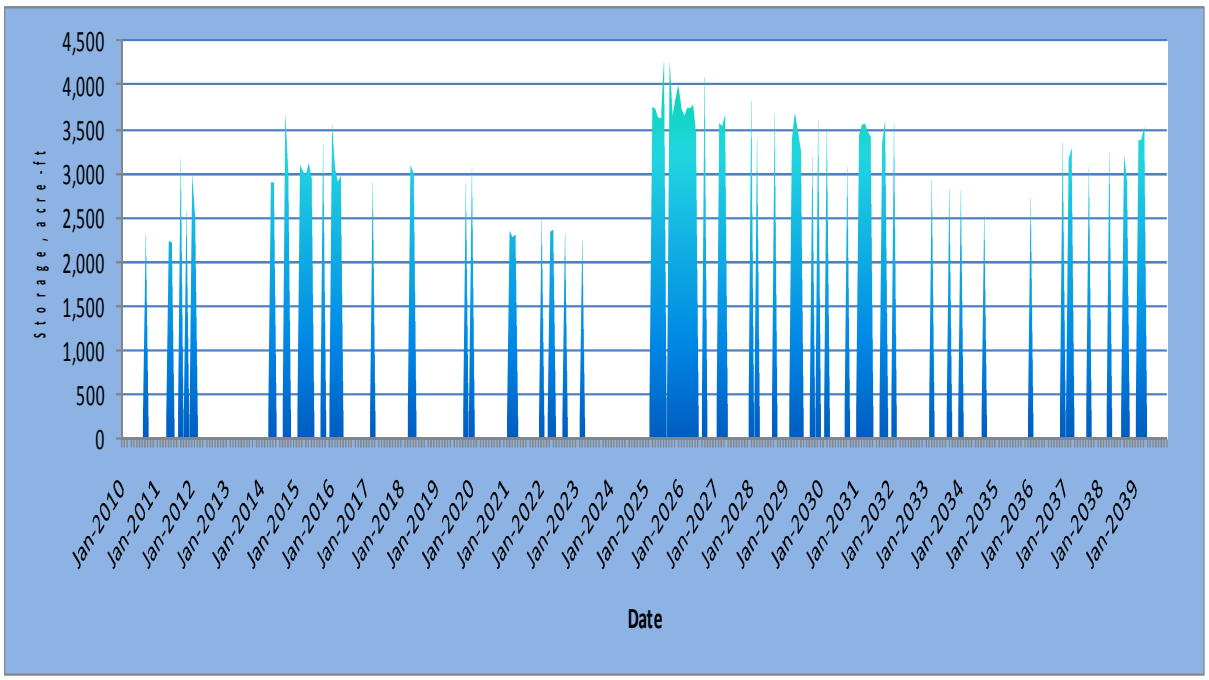

Figure B11- NODOS Project, Funks Reservoir Pump-Back Operations- High Case

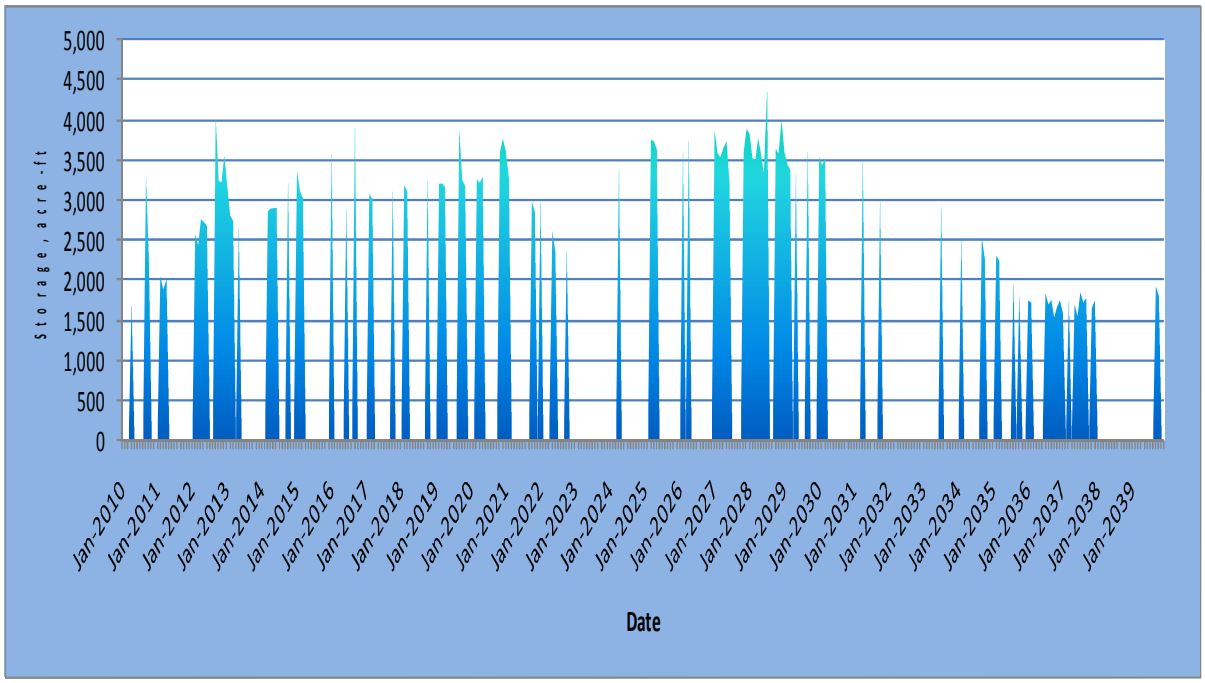

Figure B12- NODOS Project, Funks Reservoir Pump-Back Operations- Low Case

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Appendix C- NODOS Project Modeling Results

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Table C1- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, High Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total								
TC Canal Pumping	-7,292	-427	-430	-123	-487	-466	-279	-194	-283
GCID Pumping	-7,571	-377	-424	-305	-339	-356	-413	-298	-297
Sac River Pumping	-57,370	-5,239	-7,613	0	-6,500	-4,032	-610	0	-1,064
TRR Pumping	-9,673	-751	-509	-165	-644	-669	-509	-193	-475
Sites Pumping	-180,853	-13,077	-16,211	-453	-15,550	-14,529	-4,759	-742	-7,381
Subtotal	-262,758	-19,871	-25,187	-1,047	-23,519	-20,052	-6,571	-1,428	-9,499
NODOS Generation	Period Total								
Sites Geneneration On-Peak	136,857	3,948	3,760	12,855	8,001	5,408	2,292	7,406	7,589
TRR Generation On-Peak	18,362	990	523	1,575	960	793	359	1,031	1,057
TRR Genenration Off-Peak	220	0	0	33	0	40	0	46	18
Sac River Generation On-Peak	21,306	807	328	1,965	1,479	440	440	957	979
Sac River Genenration Off-Peak	8,692	330	194	1,004	596	178	55	316	498
Subtotal	185,437	6,076	4,805	17,432	11,036	6,859	3,146	9,756	10,140
PumpBack Operations	53,575	336	1,663	896	0	2,402	3,542	2,404	579
NODOS Project Total	-23,746	-13,459	-18,719	17,281	-12,484	-10,791	116	10,732	1,219

Notes

Cash Flow reported pre-tax in PV($000).

Evaluation performed 10/23/2009 2:12:27 PM.

Report updated at 02:28:53 PM.

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Table C1 (Cont.)- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, High Deliveries Case

9	10	11	12	13	14	15	16	17	18	19
-387	-343	-205	-183	-144	-252	-400	-237	-162	-282	-103
-286	-268	-227	-241	-265	-322	-273	-341	-282	-228	-199
-2,690	-1,693	-183	-2,239	-13	-2,763	-6,083	-2,123	-112	-1,362	-9
-442	-407	-113	-162	-172	-463	-640	-154	-275	-586	-166
-10,644	-7,597	-2,770	-3,380	-1,026	-6,440	-14,802	-5,252	-1,689	-7,808	-1,558
-14,449	**-10,308**	**-3,497**	**-6,206**	**-1,620**	**-10,240**	**-22,198**	**-8,106**	**-2,520**	**-10,267**	**-2,035**
5,955	7,705	7,820	4,441	3,114	1,560	5,820	92	2,594	5,220	4,707
782	1,002	1,045	441	674	464	636	4	343	543	691
0	6	10	0	0	0	0	0	0	0	11
988	1,104	1,288	1,004	684	274	962	389	278	836	468
270	417	577	524	216	0	395	14	131	324	228
7,995	**10,234**	**10,741**	**6,410**	**4,688**	**2,298**	**7,812**	**499**	**3,346**	**6,924**	**6,105**
1,113	629	694	1,328	1,955	485	0	7,484	5,377	2,047	2,263
-5,340	**554**	**7,938**	**1,532**	**5,023**	**-7,457**	**-14,386**	**-123**	**6,202**	**-1,297**	**6,333**

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Table C1 (Cont.)- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, High Deliveries Case

20	21	22	23	24	25	26	27	28	29	30
-208	-250	-133	-137	-132	-158	-236	-157	-132	-187	-174
-229	-193	-207	-145	-175	-134	-154	-168	-137	-149	-138
-858	-2,101	-854	0	-887	-301	-2,861	-2,796	-760	-1,238	-386
-69	-376	-41	-37	-274	-126	-248	-356	-230	-259	-162
-4,132	-7,566	-1,618	-1,106	-3,865	-2,335	-6,300	-5,801	-3,725	-5,214	-3,521
-5,496	**-10,486**	**-2,853**	**-1,425**	**-5,335**	**-3,053**	**-9,798**	**-9,278**	**-4,985**	**-7,048**	**-4,381**
3,349	3,979	1,330	6,129	3,414	3,729	2,794	3,026	3,654	2,340	2,826
282	494	90	557	531	494	443	339	564	320	335
0	5	0	0	21	27	0	0	3	0	0
535	511	353	1,007	447	622	513	533	388	280	445
237	190	129	462	265	294	260	235	147	91	117
4,402	**5,179**	**1,902**	**8,155**	**4,679**	**5,166**	**4,010**	**4,132**	**4,757**	**3,032**	**3,722**
3,867	1,295	4,489	635	1,094	1,055	0	1,124	1,648	1,572	1,600
2,774	**-4,013**	**3,539**	**7,365**	**438**	**3,167**	**-5,787**	**-4,022**	**1,421**	**-2,444**	**940**

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Table C2- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Median Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	**Period Total**								
TC Canal Pumping	**-6,971**	-283	-211	-327	-448	-396	-239	-216	-168
GCID Pumping	**-7,545**	-426	-322	-344	-332	-310	-266	-282	-307
Sac River Pumping	**-45,386**	-642	0	-1,209	-3,076	-1,952	-212	-2,593	-15
TRR Pumping	**-9,069**	-515	-210	-548	-520	-473	-130	-190	-200
Sites Pumping	**-158,002**	-4,685	-807	-8,475	-12,290	-8,794	-3,206	-3,934	-1,187
Subtotal	**-226,974**	**-6,551**	**-1,551**	**-10,904**	**-16,666**	**-11,925**	**-4,053**	**-7,215**	**-1,878**
NODOS Generation	**Period Total**								
Sites Geneneration On-Peak	**133,478**	2,377	8,056	8,804	6,920	8,886	9,194	5,277	3,652
TRR Generation On-Peak	**17,743**	403	1,192	1,276	943	1,201	1,269	536	815
TRR Genenration Off-Peak	**204**	403	1,192	1,276	943	1,201	1,269	536	815
Sac River Generation On-Peak	**21,461**	494	1,105	1,180	1,203	1,328	1,563	1,215	832
Sac River Genenration Off-Peak	**8,402**	59	362	607	318	500	695	643	258
Subtotal	**181,288**	**3,736**	**11,908**	**13,142**	**10,327**	**13,117**	**13,991**	**8,207**	**6,371**
PumpBack Operations	**59,838**	1,347	1,103	383	883	581	628	1,174	1,704
NODOS Project Total	**14,151**	**-1,468**	**11,459**	**2,622**	**-5,455**	**1,772**	**10,565**	**2,167**	**6,197**

Notes

Cash Flow reported pre-tax in PV($000).

Evaluation performed 10/23/2009 2:12:27 PM.

Report updated at 02:28:53 PM.

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Table C2 (Cont.)- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Median Deliveries Case

9	10	11	12	13	14	15	16	17	18	19
-293	-459	-277	-189	-340	-126	-265	-316	-167	-169	-162
-374	-314	-394	-327	-274	-243	-289	-244	-259	-178	-214
-3,197	-6,937	-2,499	-129	-1,653	-11	-1,105	-2,659	-1,070	0	-1,074
-542	-735	-181	-327	-708	-204	-89	-476	-51	-45	-335
-7,503	-16,896	-6,194	-2,003	-9,442	-1,919	-5,336	-9,581	-2,032	-1,366	-4,718
-11,910	**-25,340**	**-9,545**	**-2,975**	**-12,416**	**-2,503**	**-7,084**	**-13,277**	**-3,579**	**-1,758**	**-6,502**
1,823	6,761	109	3,091	6,268	5,737	4,207	5,000	1,667	7,553	4,162
559	760	5	417	665	855	356	626	114	696	658
559	760	5	417	665	855	356	626	114	696	658
335	1,161	472	332	1,019	576	686	641	448	1,261	550
0	470	17	165	407	291	295	248	163	577	334
3,277	**9,913**	**606**	**4,422**	**9,024**	**8,315**	**5,900**	**7,141**	**2,505**	**10,782**	**6,362**
405	0	6,787	4,759	2,030	2,434	4,590	1,542	5,233	686	1,222
-8,228	**-15,427**	**-2,152**	**6,207**	**-1,362**	**8,246**	**3,407**	**-4,594**	**4,159**	**9,709**	**1,081**

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Table C2 (Cont.)- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Median Deliveries Case

20	21	22	23	24	25	26	27	28	29	30
-188	-281	-187	-160	-227	-212	-127	-115	-155	-134	-134
-159	-183	-202	-165	-181	-167	-179	-126	-182	-150	-152
-357	-3,412	-3,326	-918	-1,503	-469	-1,320	-164	-2,034	-1,495	-354
-150	-296	-425	-278	-315	-197	-35	-126	-295	-355	-115
-2,779	-7,514	-6,893	-4,500	-6,333	-4,280	-2,471	-1,154	-4,792	-4,634	-2,283
-3,634	**-11,686**	**-11,033**	**-6,021**	**-8,560**	**-5,326**	**-4,132**	**-1,685**	**-7,459**	**-6,768**	**-3,039**
4,456	3,338	3,634	4,410	2,840	3,433	375	3,349	1,520	3,765	2,813
603	540	415	694	396	414	3	397	180	514	239
603	540	415	694	396	414	3	397	180	514	239
767	634	655	473	341	550	324	452	117	305	444
354	314	288	186	117	144	46	143	74	134	194
6,783	**5,366**	**5,407**	**6,458**	**4,090**	**4,955**	**752**	**4,737**	**2,070**	**5,231**	**3,929**
1,117	0	1,219	1,821	1,753	1,828	5,615	2,492	2,879	1,823	1,801
4,266	**-6,320**	**-4,407**	**2,258**	**-2,717**	**1,458**	**2,235**	**5,543**	**-2,510**	**286**	**2,691**

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Table C3- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Low Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total								
TC Canal Pumping	-6,578	-429	-436	-284	-261	-352	-312	-310	-372
GCID Pumping	-7,171	-350	-341	-398	-283	-411	-346	-347	-297
Sac River Pumping	-47,780	-2,800	-942	-3,013	-348	-4,670	-3,503	-805	-1,490
TRR Pumping	-7,848	-613	-410	-78	-295	-683	-835	-271	-583
Sites Pumping	-154,562	-11,756	-8,796	-5,511	-2,689	-11,035	-10,895	-5,291	-9,251
Subtotal	-223,939	-15,948	-10,925	-9,284	-3,876	-17,151	-15,891	-7,024	-11,992
NODOS Generation	Period Total								
Sites Geneneration On-Peak	128,900	5,414	7,163	861	7,545	3,556	8,671	6,662	6,897
TRR Generation On-Peak	16,476	918	990	9	1,001	463	1,315	621	1,037
TRR Genenration Off-Peak	230	0	0	0	0	0	70	0	38
Sac River Generation On-Peak	20,867	792	1,342	834	1,156	302	801	1,170	866
Sac River Genenration Off-Peak	7,804	239	345	118	359	190	332	492	167
Subtotal	174,277	7,363	9,841	1,822	10,061	4,510	11,188	8,946	9,005
PumpBack Operations	65,437	961	768	4,879	2,022	2,728	1,848	2,143	1,856
NODOS Project Total	15,775	-7,624	-317	-2,583	8,207	-9,913	-2,855	4,065	-1,131

Notes

Cash Flow reported pre-tax in PV($000).

Evaluation performed 10/23/2009 2:12:27 PM.

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Table C3 (Cont.)- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Low Deliveries Case

9	10	11	12	13	14	15	16	17	18	19
-304	-213	-254	-52	-70	-286	-382	-316	-343	-113	-113
-298	-265	-320	-245	-181	-235	-289	-236	-234	-239	-242
-1,950	-328	-2,537	-65	-230	-3,846	-4,189	-2,857	-2,444	-2,149	-962
-548	-181	-85	-1	-93	-247	-537	-332	-466	-4	-1
-7,895	-2,032	-6,213	-28	-1,201	-7,954	-13,272	-8,857	-10,313	-2,388	-762
-10,995	**-3,020**	**-9,409**	**-391**	**-1,774**	**-12,569**	**-18,668**	**-12,597**	**-13,800**	**-4,893**	**-2,079**
5,673	4,083	2,519	8,521	4,279	5,379	5,259	6,638	4,865	2,020	406
745	811	324	904	139	787	642	596	650	166	71
0	17	0	7	0	14	17	5	6	0	0
840	214	587	1,287	1,381	992	734	1,105	773	319	213
314	0	91	572	763	359	362	594	120	108	38
7,573	**5,125**	**3,521**	**11,292**	**6,562**	**7,530**	**7,014**	**8,938**	**6,415**	**2,613**	**729**
1,994	4,008	3,361	2,713	2,237	0	617	2,228	1,369	5,801	7,485
-1,429	**6,113**	**-2,527**	**13,614**	**7,025**	**-5,038**	**-11,037**	**-1,431**	**-6,016**	**3,521**	**6,135**

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Table C3 (Cont.)- Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Low Deliveries Case

20	21	22	23	24	25	26	27	28	29	30
-171	-139	-222	-217	-95	-71	-48	-34	-59	-199	-121
-212	-157	-197	-153	-168	-147	-123	-93	-123	-159	-82
-1,175	-22	-1,311	-352	-350	-810	-1,060	-124	-52	-3,178	-218
-503	-109	-284	-148	-128	-62	-59	-7	-24	-169	-94
-4,369	-1,123	-6,056	-4,773	-1,961	-1,427	-1,860	-155	-252	-5,311	-1,136
-6,430	**-1,549**	**-8,070**	**-5,641**	**-2,703**	**-2,517**	**-3,150**	**-414**	**-511**	**-9,016**	**-1,652**
3,512	5,177	4,174	5,941	3,605	2,720	2,217	426	186	1,927	2,605
620	672	564	604	322	454	298	169	74	199	307
1	12	44	0	0	0	0	0	0	0	0
138	707	370	794	921	486	572	31	18	469	650
107	196	167	439	397	167	293	0	0	192	283
4,379	**6,764**	**5,319**	**7,779**	**5,245**	**3,828**	**3,380**	**626**	**278**	**2,788**	**3,846**
3,419	2,025	1,181	0	629	1,374	1,635	2,655	2,840	0	660
1,367	**7,240**	**-1,571**	**2,137**	**3,171**	**2,685**	**1,864**	**2,868**	**2,608**	**-6,228**	**2,854**

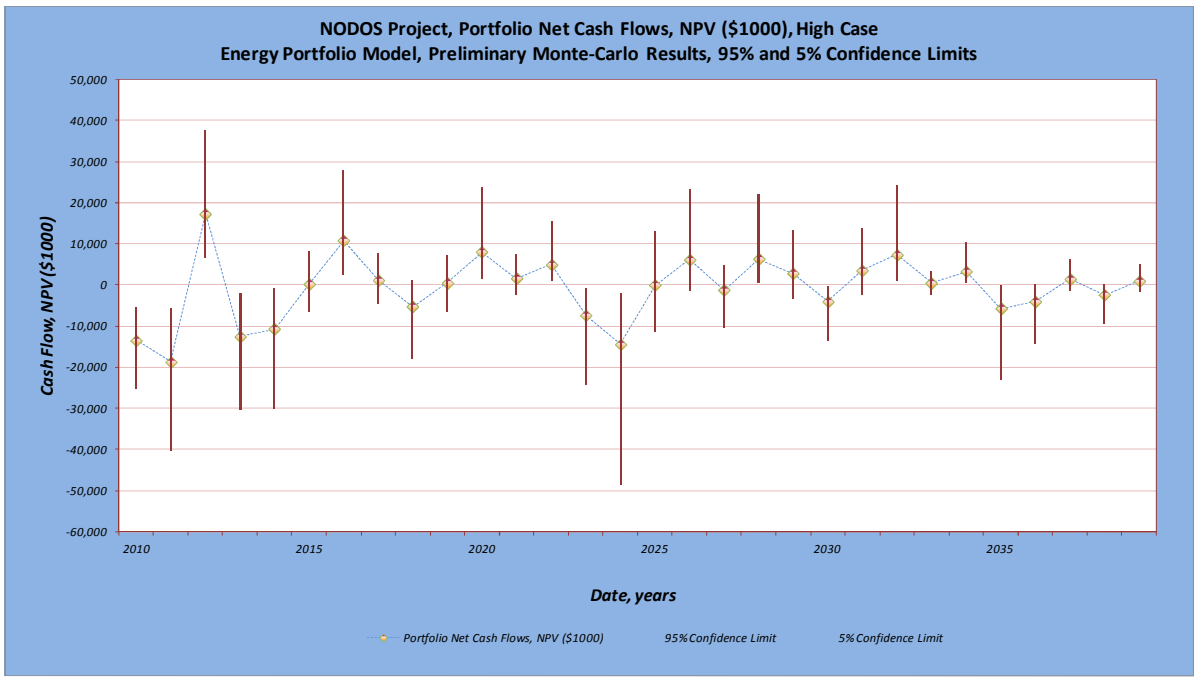

Figure C1- NODOS Project, Portfolio Cash Flow, 2010 through 2039, High Case

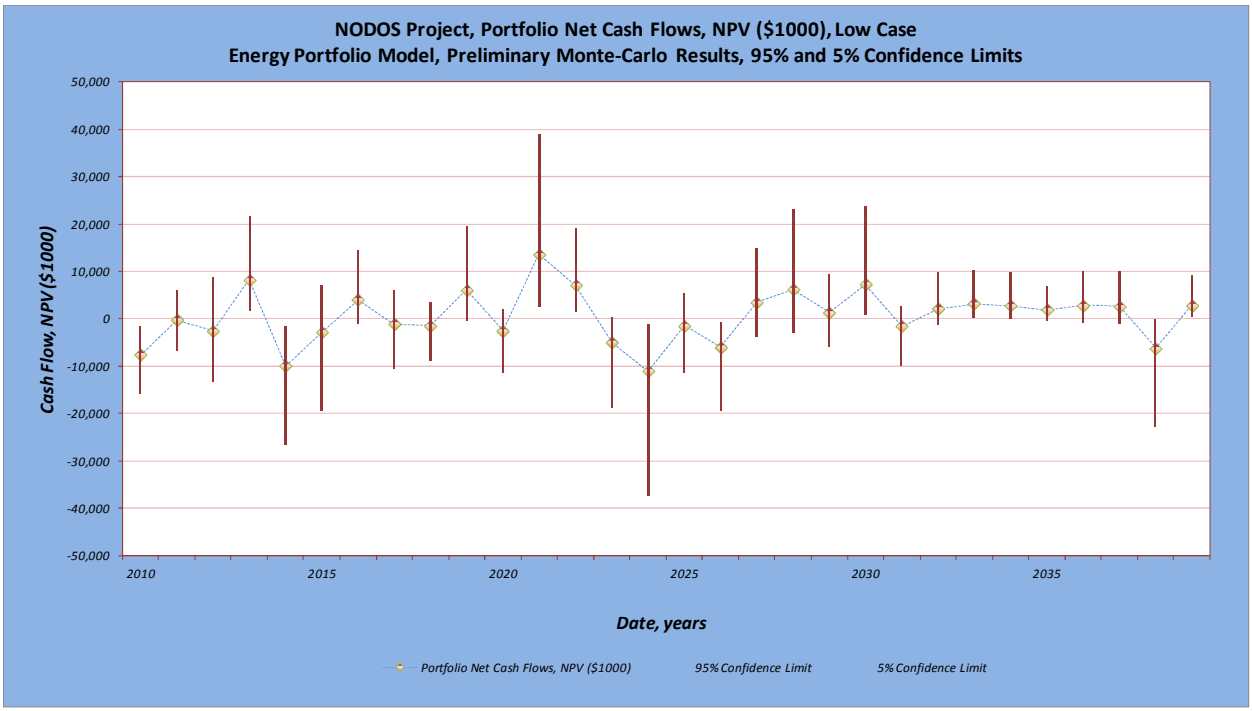

Figure C2- NODOS Project, Portfolio Cash Flow, 2010 through 2039, Low Case

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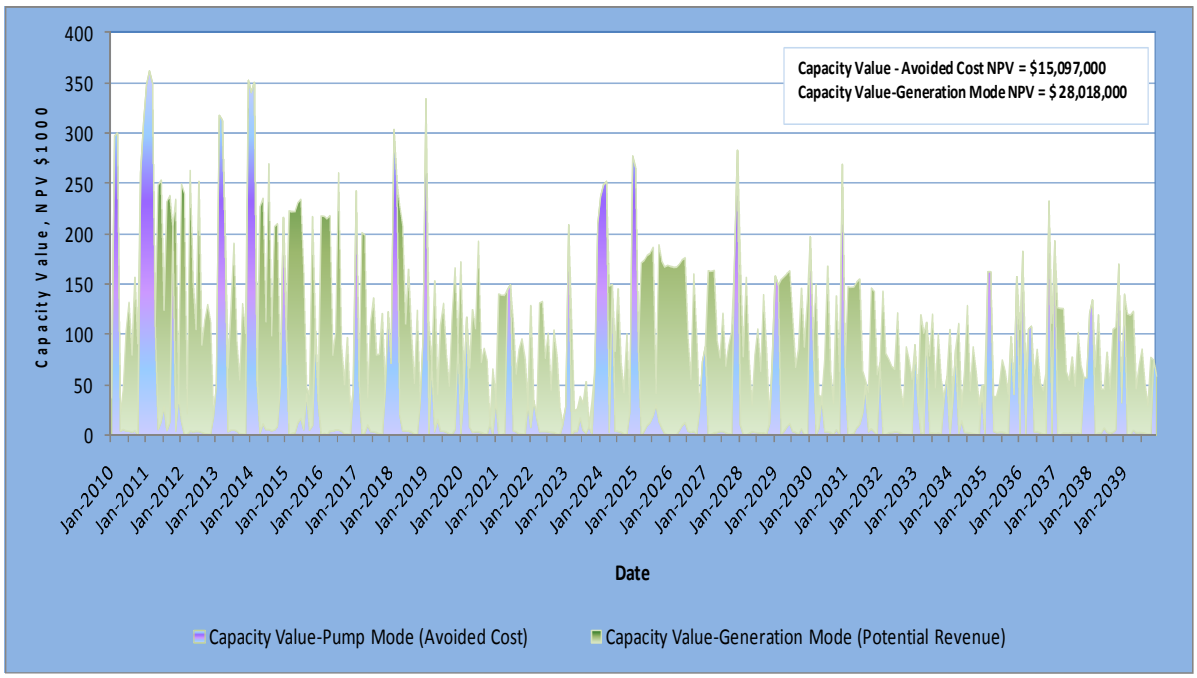

Figure C3- NODOS Project, Capacity Revenues and Obligations, High Case

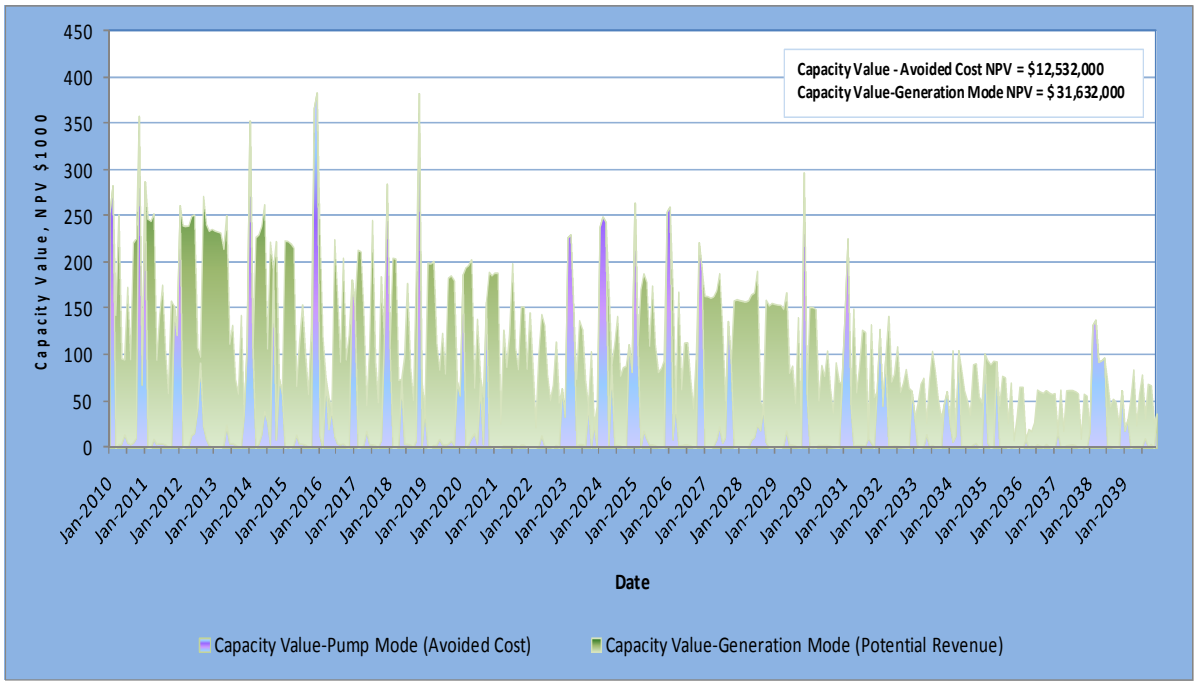

Figure C4- NODOS Project, Capacity Revenues and Obligations, Low Case

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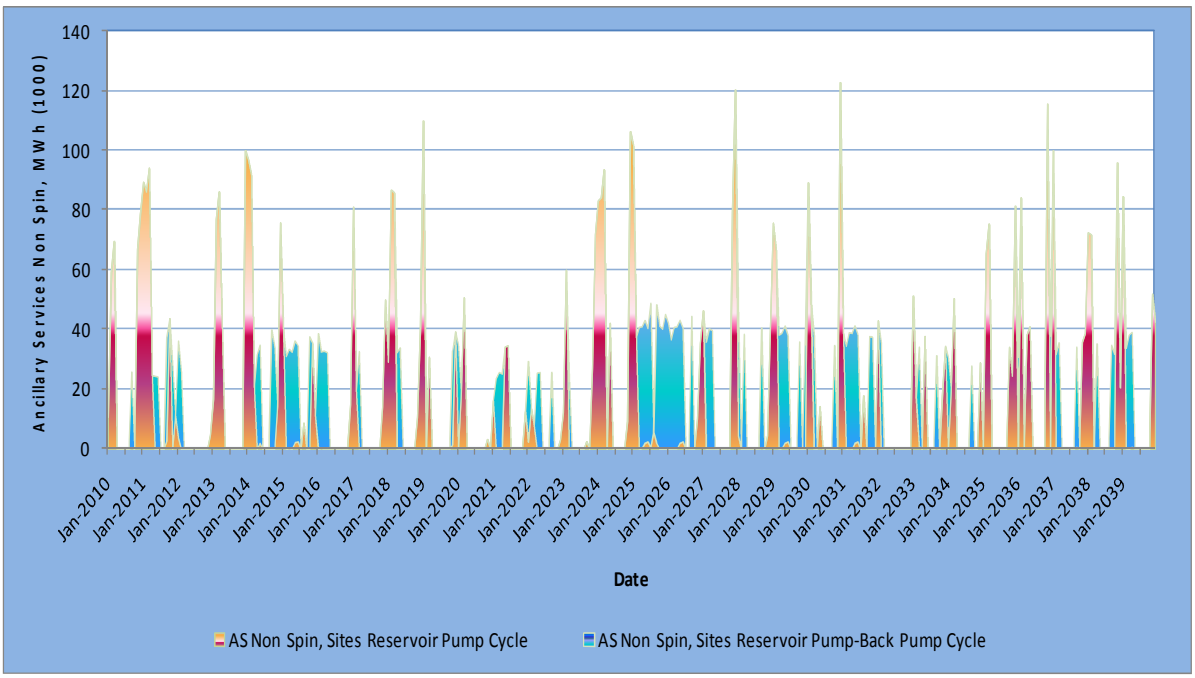

Figure C5- Ancillary Service Potential, Sites Reservoir Pumping Cycle, High Case

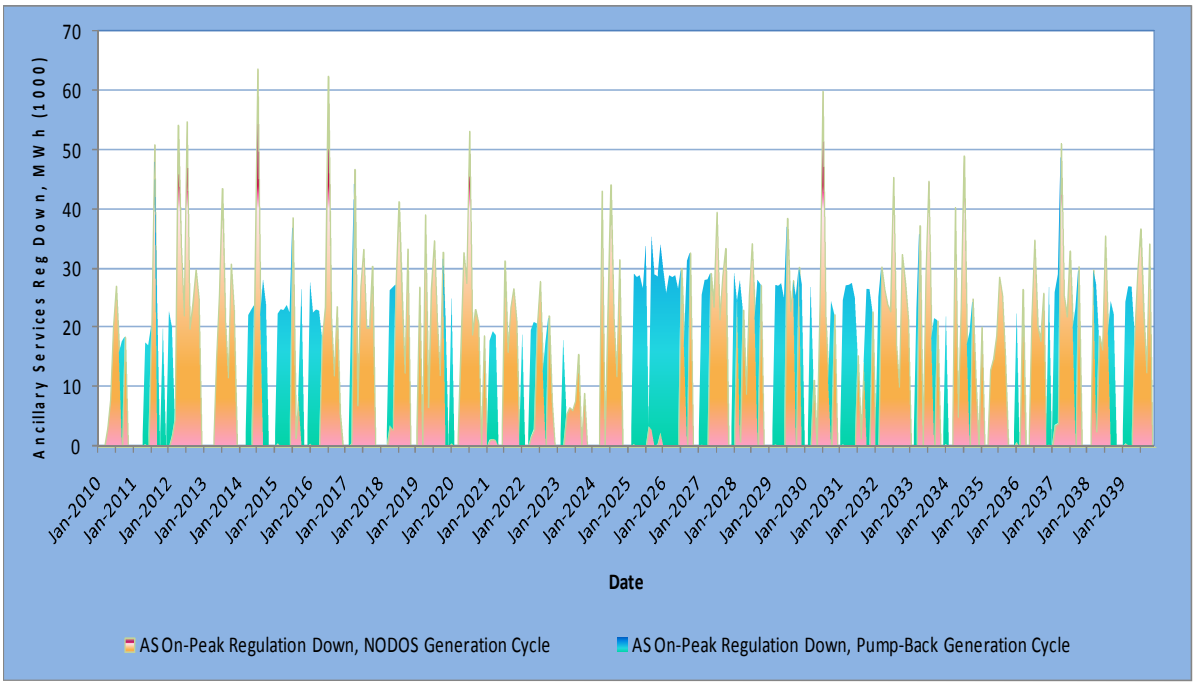

Figure C6- Ancillary Service Potential, NODOS Project Generation Cycle, High Case

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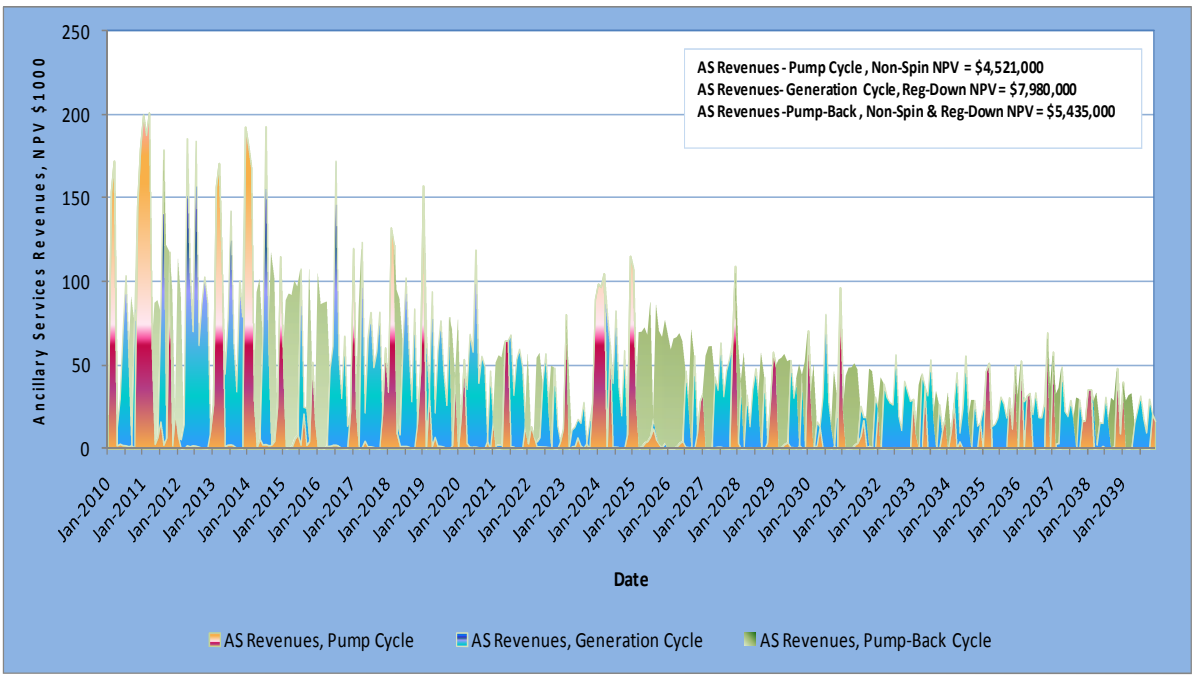

Figure C7- Ancillary Service Potential, Monthly NODOS Project Cash flows, High Case

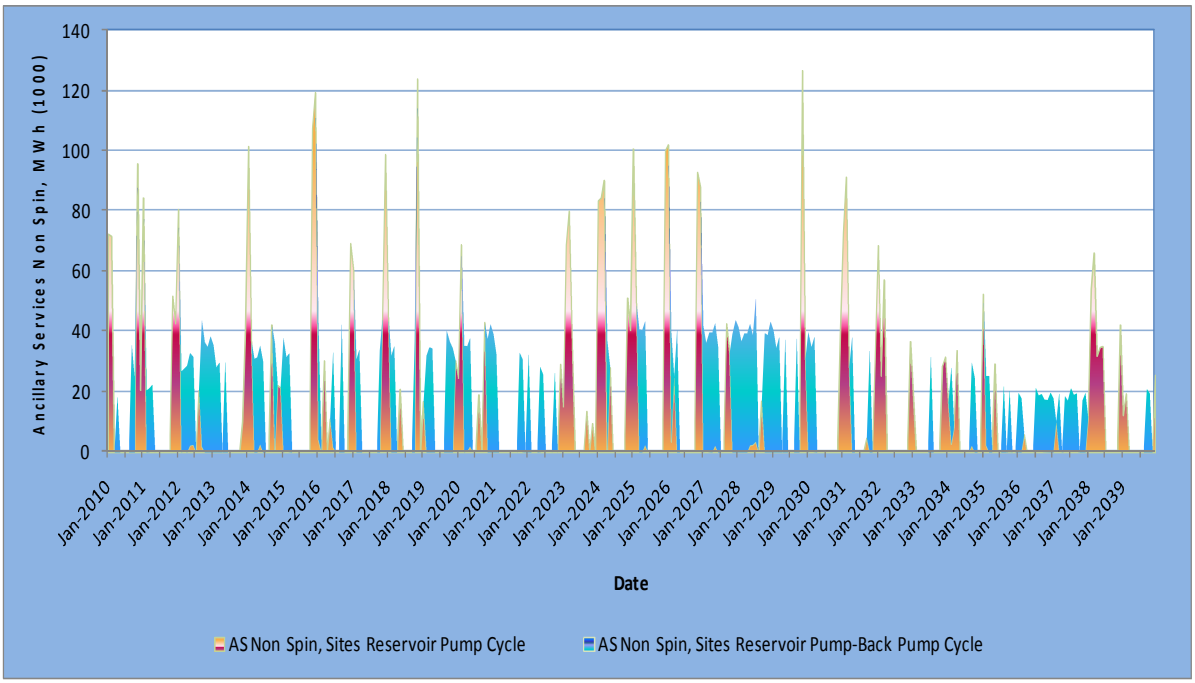

Figure C8- Ancillary Service Potential, Sites Reservoir Pumping Cycle, Low Case

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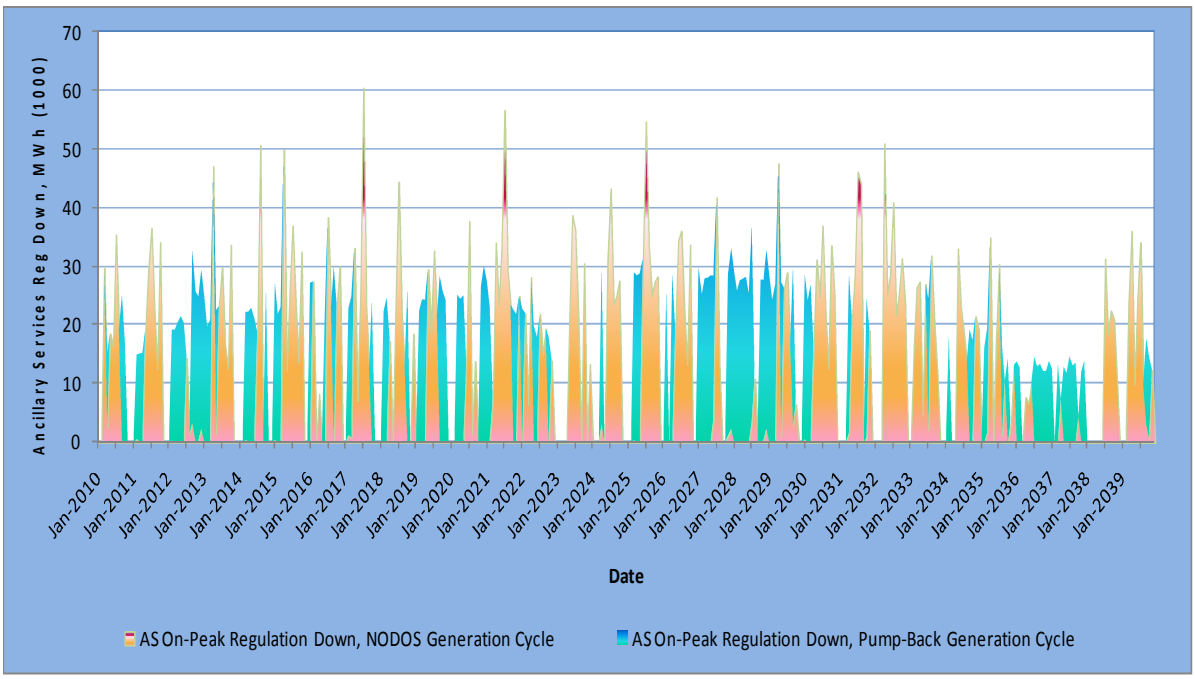

Figure C9- Ancillary Service Potential, NODOS Project Generation Cycle, Low Case

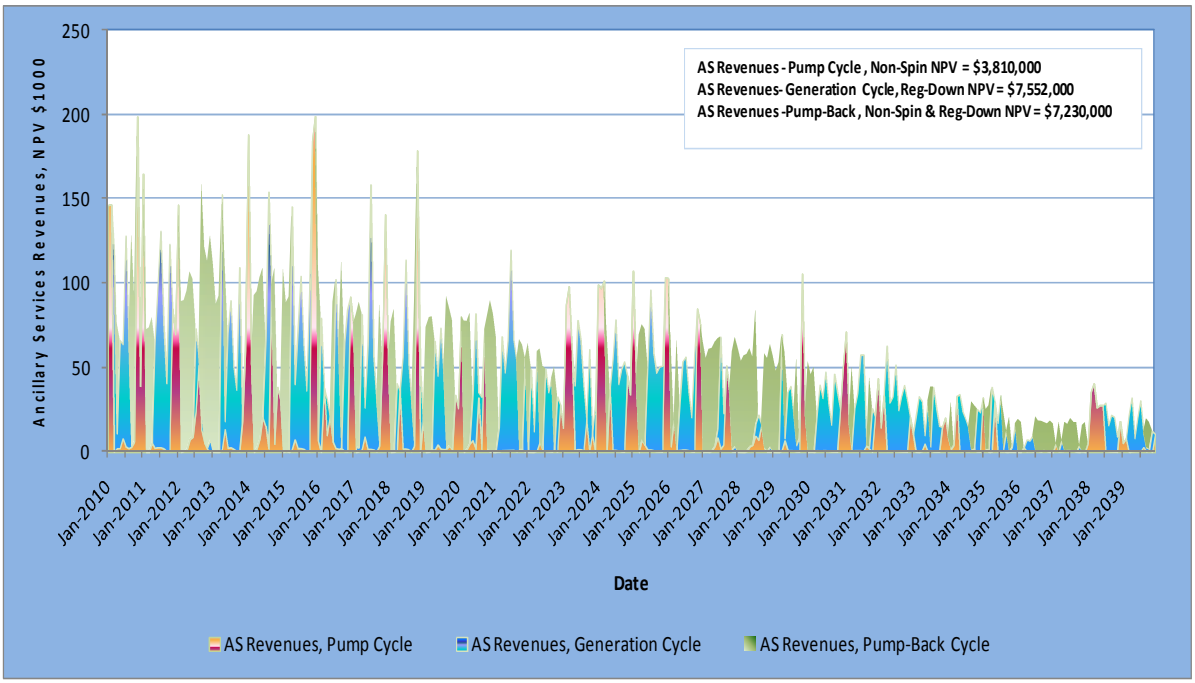

Figure C10- Ancillary Service Potential, Monthly NODOS Project Cash flows, Low Case

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Phase 2

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California Department of Water Resources

North of Delta off-stream Storage (NODOS) Project

Power Planning Study (Phase 2)

Power and Risk Office

October, 2011

This document is not released as a draft EIR pursuant to CEQA Guidelines § 15087. As such, DWR is not soliciting and will not respond to comments submitted on this document, although any comments received will be retained and may be considered during preparation of a future draft EIR.

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Executive Summary

PARO's Power Planning Branch was tasked by the Division of Statewide Integrated Water Management (DSIWM) to conduct a power planning study on the proposed North-of-Delta Offstream Storage Project (NODOS Project). The NODOS Project is in the planning phase, at a feasibility level stage. The objective of the PARO power planning study is to analyze the proposed action alternatives, from a power planning perspective. The Project's action alternatives were developed pursuant to NEPA and CEQA Notice of Intent and Notice of Preparation (that were filed and published in November 2001 by Reclamation and DWR respectively) to investigate surface storage opportunities north of the Delta. The Study objective includes optimization of the NODOS Project Power operations, and a financial assessment of the NODOS Project obligations and revenues resulting from its exposure to the energy market. Also, the power planning study will provide a roadmap for the transmission interconnection planning process for the Project facilities.

The PARO power planning study is being conducted in multiple phases, as the NODOS Project planning and implementation processes evolve with time. A first phase was completed in 2009, in which the designed capacities and the corresponding operational scenarios for the Project's components were analyzed, and some design modifications were recommended. The current (second) phase of the Study is meant to analyze the three action alternatives identified for the NODOS Project, relative to the "no action" alternative, and to optimize power operations (with sustained water operations) to better capture power market opportunities and utilize the inherent excess capacities (resulting from hydrology swings) for the different components of the project. Also, in this phase of the study, needed design and operational changes, that will add valuable operational flexibilities are identified. Operational flexibilities will be crucial for the NODOS Project to be able to participate in a complex and evolving energy market, yet, sustain intended water diversions and deliveries. A third phase of the power planning study will follow, subject to DSIWM's desire to explore additional market opportunities (such as renewables integration) that may enhance the NODOS Project's viability and value.

The NODOS Project is an off-stream seasonal storage facility, proposed to be built, ten miles west of the town of Maxwell, CA. The NODOS Project is composed of two main reservoirs (Sites and Holthouse/Funks), and a conveyance system that includes a number of physical components (intakes, pumps, canals, pipes, and terminal structures). The NODOS Project is designed to capture the annual seasonal cycle of the Sacramento River, where flood water could be captured, stored, and re-delivered at a later time. The major storage component of the NODOS Project is Sites Reservoir, ranging from 1.27 (Alt A) to a 1.81(Alt B & Alt C) million acre-ft reservoir. Water would be delivered to and out of Sites Reservoir through a network of pumping/generating plants and conveyances. Three diversion points (Alt B will have two diversion points) along the Sacramento River will be used to capture and divert/pump water to the NODOS Project.

DSIWM supplied PARO's Power Planning Branch with the most recent CALSIM II model runs, available to them, that describes the intended operations of the NODOS Project, based on the 82 years of historical hydrology record. The CALSIM II results are used to identify a Median Case, 30-year time-series, for the NODOS Project diversions from the Sacramento River which is the basis for the study analysis. Project operations, constraints, and assumptions, as envisioned by the NODOS Project team, are maintained and further optimized to maximize the value of the Project's assets.

Daily pumpback operations are superimposed (where and when possible) to better utilize excess capacities of Project facilities (resulting from hydrology swings), and to capture energy market opportunities. The intent is to generate an additional revenue stream that would enhance the Project's viability and value. A dispatch profile for the daily pumpback operations is generated based on market opportunities, efficiency of Sites Reservoir pumping/generating plant, and available storage at Holthouse Reservoir.

NODOS Energy Portfolio Value

Two operational scenarios are used to model each of the three action alternatives considered for the Project, one is labeled as "Incidental," and a second one is labeled as "Optimized." For the "Incidental" scenario, pumping and generating at the different NODOS Project facilities are driven by water diversions and releases (i.e. "Incidental"). For the "Optimized" scenario, pumping and generating at the Sites Reservoir pumping-generating plant are reshaped to minimize pumping costs obligations (Pumping in Off-Peak hours) and to maximize energy generation revenues (Generating in Super-Peak hours) for the Project. Also, optimizing operations allowed for the project's excess capacity to be used to superimpose pumpback operations on the NODOS Project operational modes.

For the 30-year planning period, optimizing the NODOS Project operations resulted in additional revenues for the project in NPV totaling $72,503,000 for Alternative A, $76,343,000 for Alternative B, and $77,003,000 for Alternative C. For all three action alternatives considered for the NODOS Project, optimizing operations resulted in changing the net project cash flow from a negative to a positive cash flow – an improvement that would significantly enhance the economics of the project. For the NODOS Project "Incidental" operations, the net total Project's Power Portfolio value (generation revenues minus pumping costs) (for the Median Case of Project Diversions) in NPV is $-50,363,000, $-65,077,000, and $-54,206,000 for Alternatives A, B, and C, respectively. Whereas, for the NODOS Project "Optimized" operations, the net Project's Power Portfolio value in NPV is $22,140,000, $11,269,000, and $22,797,000 for Alternatives A, B, and C, respectively.

Capacity, Ancillary Services, and Renewable Integration

A crucial element of reliable grid operations, and relevant to the NODOS Project operations, is Resource Adequacy (RA). For the NODOS Project, RA obligations are a pseudo financial obligation in pumping/diversion cycle, and a revenue opportunity in generation/release cycle. For the NODOS Project, RA obligations for the pumping cycle are met through the "Self-Provided" provisions of current CAISO Tariff- provided that the Project meets CAISO participating load requirements. For a generation asset, there are two different levels of participation in CAISO's capacity market- local RA, and system RA based on the relative location of that specific asset to pre-identified congested local areas within the CAISO managed grid. Monetizing potential revenues for the NODOS Project from participation in the Capacity market is a difficult task. The uncertainty in projecting where and when RA products are needed will render any estimate worthless, at this time. So, a range of values is offered to describe potential revenues for the NODOS Project form RA offerings, and was based on a $2/ KW-year (for System RA) to $25.40/KW-year (for local RA products).

The CAISO procures Ancillary Services (AS) to ensure that it has adequate reserve generation capacity to maintain the electric system reliability and system frequency, by matching generation and load at all times under both normal and abnormal operating conditions. For the NODOS

Project pumping/generating facilities, if interconnected to CAISO grid, AS would be a significant operations and costs/revenues concern. A preliminary assessment for AS opportunities for the NODOS Project is conducted using the Median Case CALSIM II deliveries, for the 30-year planning period. For the pumping cycle, the NODOS Project will have the opportunity, as a participating load (meeting CAISO Tariff definition), to sell Non Spin AS into the CAISO market. For the generation cycle, the NODOS Project will have the opportunity to sell Regulation Down AS into the CAISO market. The average values for the Off-Peak Non-Spin, and On-Peak Regulation Down are calculated using, as basis, published clearing prices for the CAISO AS markets. For Alternative C of the NODOS Project, the total AS revenues from Non Spin (the pump mode) for the 30-year planning period in NPV is $4,925,000. The corresponding total AS revenues from Regulation Down (in the generation mode) for the Project in NPV is $9,198,000. The total AS revenues from the pumpback operations in NPV is $11,595,000. The NODOS Project total potential AS revenues in NPV is $25,718,000 for the 30-year planning period. It should be noted that the aforementioned AS revenues are only a measure of potential revenues based on current market trends- granted that the CAISO market will evolve overtime to accommodate load growth, renewable integration, regulatory changes, etc.

The California Renewable Energy Resources Act (CRERA), signed by California Governor Brown on April 12th, 2011, significantly increased the State's renewable portfolio standard (RPS) targets from 20% to 33% by 2020. CRERA also expanded the compliance obligations to include virtually all retail sales of electricity in California. In September 2010, CAISO undertook a multi phase stakeholder process (Renewable Integration Market and Product Review Initiative (RIMPR)), aimed at identifying changes to the energy market structure and at introducing new market products to reliably mitigate the impact of Renewable generation (Intermittent generation) as it penetrates the market. Other game changers in the power sector are energy storage technologies- among which and a very promising technology is pump-storage hydroelectric facilities. New role for energy storage includes making intermittent renewable energy facilities into dispatchable resources and enhancing grid reliability and power quality. Other forces driving the need for energy storage technologies are climate change policies, smart grid initiatives, and the desire to improve utilization of generation and transmission capacities.

For the NODOS Project, there is great potential for the project's generation and pumping assets to participate in providing renewable integration services as the market needs evolve. Although, the NODOS Project potential in renewable energy integration is certain, it is difficult to monetize that potential at this time because of the absence of a clear tradable market for these services. CAISO RIMPR may introduce new market products that the NODOS Project can provide, yet sustain its primary water storage and delivery objectives.

Conclusions-Second Phase

Under the Median Case deliveries of the NODOS Project, the estimated NPV of the Project's power portfolio (Energy only) for the 30-year planning period in NPV is estimated to be $22,140,000, $11,269,000, and $22,797,000 for Alternatives A, B, and C, respectively. Additional revenues are expected for the project's Power Portfolio from participation in the Capacity, Resource Adequacy, and energy storage markets. However, monetary values for these services are not included in project economics to avoid speculation. More work is needed to improve on the findings of the current phase of the study.

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1- Background

This report summarizes the second phase of PARO's Power Planning Study (Study) on the proposed NODOS Project, and recommends additional analyses that need to be performed in the next phase of the Study. This document reports the assumptions, the modeling approach, and the results of the second phase of the Study. Additional analyses and modeling will be needed to further explore operational scenarios and design adjustments for the different Project components that would enhance its viability and value. Changes in design parameters and optimization of operational scenarios, will add valuable operational flexibilities that will be needed for the Project to participate in a complex energy market, yet, maintain water, flood, fish, environmental, and power objectives.

NODOS Project is an off-stream seasonal storage facility, proposed to be built, ten miles west of the town of Maxwell. The project is in the planning, feasibility level, stage. NODOS Project is composed of two main reservoirs, Sites and Holthouse (currently known as Funks Reservoir), and a conveyance system that includes a number of physical components (intakes, pumps, canals, pipes, and terminal structures). The project is designed to capture the annual seasonal cycle of the Sacramento River, where flood water could be stored during the high flow season and would be released during the low flow season.

Three alternatives are proposed for the NODOS Project in terms of the configurations, size, and operations of the different project components. The alternatives were formulated to satisfy a set of water and environmental objectives. The assumptions for the three NODOS Project alternatives are summarized in a January 5, 2011 document, and titled as "Definition of proposed alternatives for Evaluation in the North-of-the-Delta Off-stream Storage Administrative Draft Environmental Impact Report and Statement."

The major storage component of the NODOS Project, and common to all three alternatives, is Sites Reservoir, (a 1.2 million acre-ft for Alternative A, and a 1.8 million acre-ft for Alternative B, and C) that has up to 14,000 acre inundation footprint. For example, in Alternative C, Sites Reservoir storage capacity is generated through the construction of two main dams, Golden Gate Dam (310 ft Tall) and Sites Dam (290 ft Tall), and 9 saddle dams (ranging from 40 to 130 ft Tall), as shown in Figure-1. Two lower reservoirs (Holthouse and the Terminal Regulating Reservoir) are configured to complement the project complex, and to add the needed operational flexibility to the project operations. The existing Funks Reservoir complex would be enlarged to 6,500 acre-ft storage capacity by the addition of Holhouse Reservoir and integrated with the rest of the project components. A second reservoir would be a newly constructed, 2,000 acre-ft capacity, Terminal Regulating Reservoir (TRR) for the Glenn-Colusa Irrigation District (GCID) canal, to the east of Holthouse reservoir.

Water would be delivered to and out of Sites Reservoir through a network of pumping-generating plants and conveyances. Under Alternatives A and C, three pumping plants along the Sacramento River will be used to capture and divert water to the NODOS Project. The pumping plants are either existing/modified or new. The Tehama Colusa pumping plant, and Canal, a 2,100 cfs capacity, would be the project's upper most diversion point on the Sacramento River, near the city of Red Bluff. The project's second diversion point from the Sacramento River is the GCID pumping plant and canal, a 3,000 cfs capacity plant, and a 3,000 cfs to 1,800 cfs capacity canal. And the third diversion point is a newly constructed Sacramento River pumping-generating plant and pipeline, a 2,000 cfs pump; 1,500 cfs release capacity plant. Under Alt B,

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the Sacramento River diversion pumps are eliminated, however, releases into the Sacramento River are assumed to occur with no power generation facilities.

Figure-2 depicts the relative location of the three diversion points, along the Sacramento River, to Sites Reservoir. Holthouse reservoir will be the lower elevation collection point for the project water diversions from the Sacramento River, and a distribution point for water releases from Sites Reservoir. The hydraulic capacities of Sites Reservoir pumping-generating plant are 5,900 cfs in pumping mode and 5,100 cfs in generation mode. The TRR would have a 1,800 cfs pump; 1,500 cfs release capacity pumping-generating plant and pipeline to convey flows from the GCID canal to Holhouse Reservoir.

Figure 1- Sites Reservoir Vicinity Map

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2- Study Objective

The objective of the PARO Power Planning Study is to analyze the current/designed components, and operational scenarios of the NODOS Project that resulted from the most recent CALSIM model studies, from a power planning perspective. The study is aimed at optimizing the NODOS Project operations to maximize its power portfolio's value (revenues-obligations). Also, the Study will provide a transmission planning roadmap for the NODOS Project interconnection with available power grid systems (CAISO, WAPA, and SMUD) in the area. The Study results are meant to complement the work done by the DSIWM and their Consultants. The Study is implemented using current power market information and regulations, and available power portfolio models/tools to better evaluate energy costs and revenues of the project.

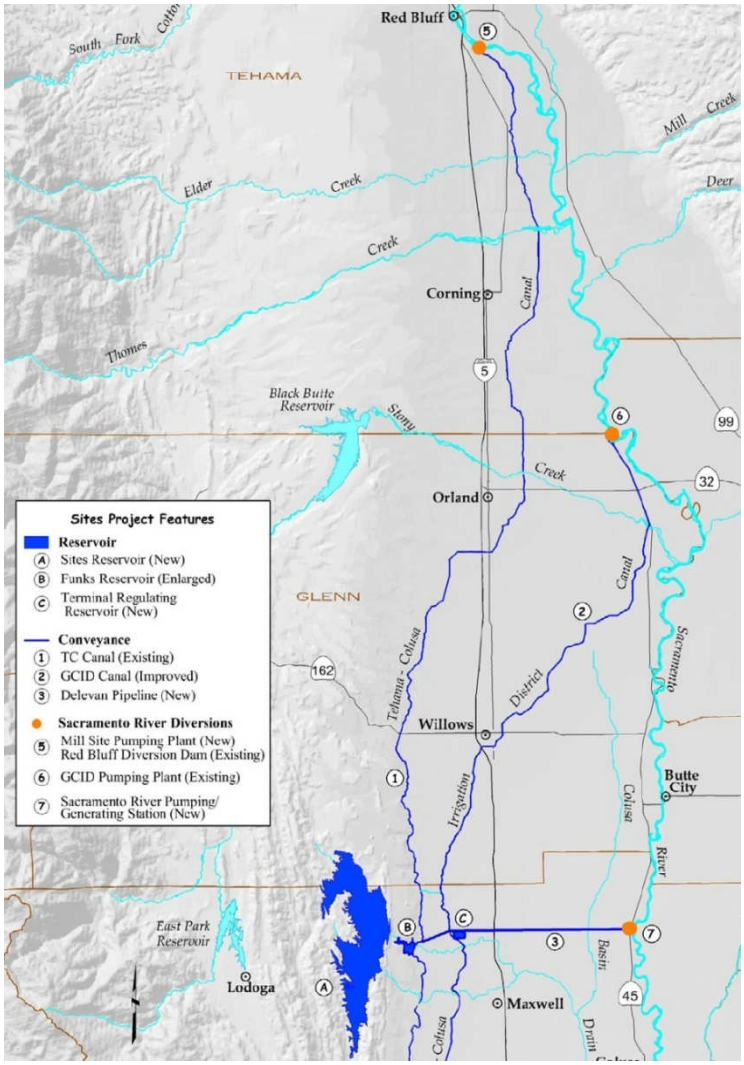

Figure 2- NODOS Project Components and Interconnection

In light of the modeling results, the Study will make recommendations for modifications in the design parameters and in the operational scenarios/assumptions that may enhance the project's value, and allow for better utilization of the project pumping-generating, and storage facilities.

Also, the study will recommend further analysis needed to study the modified/optimized operational scenarios and design parameters of the NODOS Project.

3-Modeling Approach

DSIWM supplied PARO's Power Planning Branch with the most recent CALSIM II runs. The CalSim II model runs include the No Action Alternative and the three NODOS Project action alternatives. The CalSim II model for the No Action Alternative is dated July 5, 2010 with assumptions developed on the basis of the April 1, 2010 BDCP No Action Alternative without climate change. CALSIM II runs describe the intended operations of the NODOS Project, based on the 82 years of historical hydrology record, for each of the three action Alternatives contemplated for the project. PARO used the supplied CALSIM II model results to generate a Median 30-year outlook for the NODOS Project operations. The corresponding High and Low cases (30-year outlook) for the NODOS Project diversions from the Sacramento River were also developed, to reflect the uncertainty or "bookends" in water deliveries resulting from natural hydrology swings. For each of the three action alternatives considered in this Study, the resulting 30-year operational time-series for all project components are the basis for the project's Power Portfolio value and risk.

In the current Study, project operations, constraints, and assumptions, as envisioned by the NODOS Project team, are maintained and further optimized to maximize the Power Portfolio's value. Optimizing project operations is done to capture market opportunities and price differentials between On-Peak and Off-Peak energy. Current and future power market structure and opportunities are focused on efficient and reliable market design. Optimization of the NODOS Project operations is important to more efficiently and economically use different project assets. A pumpback operation could only be superimposed on the NODOS Project operational modes (Diversion and Release modes) if pumping and generation for water delivery purpose are optimized (synced with market On-Peak and Off-Peak cycles). Also, optimization of project operations will translate the inherent excess design capacities of the project's components (resulting from hydrology swings) to operational flexibility, and minimize operations and maintenance net costs of the project.

One of the challenges in modeling a proposed project (i.e. future construction of an energy market participating project) is in choosing an appropriate project operations start date, or when the project's assets will be online. The start date will determine the window of time for a price forecast (power and fuel) and the corresponding volatility term structure that the analysis will be based on. The further out the anticipated project operations start date is, the further the price basis used for the analysis would separate from actual market dynamics and current market trends. An alternative approach to overcome this problem is to assume that the project will be operational in the near future and to accordingly value all assets and power needs. Similarly, operational, maintenance, and construction costs would be valued on the same start date basis. Then, costs and revenues would be discounted to a present value consistent with the analysis date. Planned and anticipated future changes to the regulatory environment, power market structure, and market evolution can be reflected in the analysis, on a potential scenario basis. This approach will provide a good comparative framework, and minimize the inherent forecast errors (i.e. speculation) in both projects' power portfolio value and in its construction costs.

Figure-3 is a Flowchart depicting a summary of the different steps/tracks (roadmap) taken in translating CALSIM II model runs to an Energy Portfolio set of assets and contract instruments (time series of monthly pumping and/or generation for each project component). Also, Figure-3 describes the general modeling approach that was adapted in performing the Power Planning Study on the three proposed action alternatives for the NODOS Project.

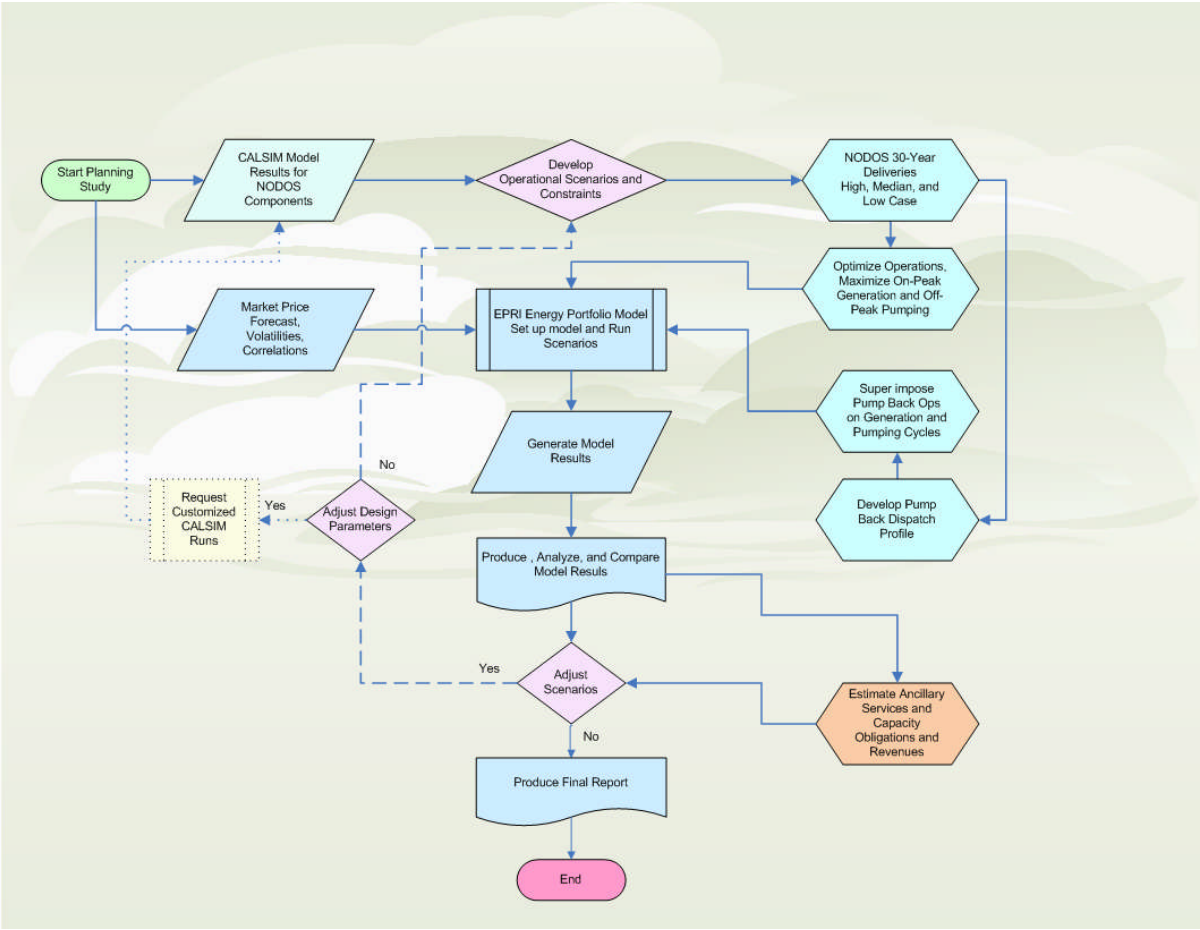

Figure 3- NODOS Project Power Planning Study Flowchart

3.1- EPRI ENERGY PORTFOLIO MODEL

Current Power Portfolio models available to PARO are used to execute the analysis for the NODOS Project. The Electric Power Research Institute (EPRI) Energy Portfolio Model (EPM), version 5, is used for this purpose. EPRI Fast Fit model, version 2.5, is used to describe the needed power and fuel price volatilities term structures, and the correlations between the different energy markets the project will be participating in, or exposed to.

The EPM is a computer software/model that is designed to help businesses manage value and risk in the energy markets. The EPM is used in the current study to value the different NODOS Project assets and energy needs. The EPM is a module of a larger suite of individual modules, called the Energy Book System (EBS). Other modules within EBS are EPRI Contract Evaluator, EPRI Risk Manager, EPRI Retail Product Mix, and EPRI Fossil Asset & Project Evaluator.

These modules were designed to meet the valuation and risk management needs of a targeted segment of the energy industry. Specifically, businesses with exposure to the energy market with corresponding exposure to a variety of financial risks. Financial risks, among other things, result from the extraordinary volatility in wholesale energy markets, especially price risk and uncertainty in the underlying fuel markets.

The EPM provides a set of templates that facilitates the description and evaluation of common types of power and fuel contracts, including supply contracts, standard and customized forward, and option contracts. It has the capabilities to model a number of physical assets, including full requirements contracts, power and fuel storage facilities, and generation assets. Many other assets can be modeled by combining two or more standard templates. The EPM requires the user to describe prices in the underlying commodity markets. The model characterizes each commodity market by a forward price curve and a term volatility structure. A correlation matrix characterizes the behavior of pairs of commodity markets is also needed by the model. The correlation matrix is an important concept in evaluating portfolio risk, and assets with two underlying markets, such as spread options or generating units. The model can also be used to assess the value and risk implications arising from uncertainty regarding the future level of load and stochastic generation (e.g., "run-of-river" hydro electric generation).

The EPM calculates the current market value of any number of user specified assets. The EPM can also calculate and report portfolio value, cash flows, and risk exposures. This includes assessing portfolio's exposure to both underlying commodity markets and customer loads. EPM allows users to manage price and load risk by applying methods that reflect the volatility and correlations between load and price. The market value of a resource depends on the cash flows it is expected to generate over its remaining life. Therefore, the market value of a generating unit depends on the difference between the value of the energy it is expected to produce and the value of the resources required for production. Market values fluctuate over time as conditions in the underlying markets fluctuate. EPM reports the market value of a resource or asset as the value of what it is worth today. One of the benefits of the EPM is that it will allow users to "mark-to-market" periodically each position in their book and thereby track gains and losses as they arise. EPM can report value and risk exposures on a weekly, monthly, quarterly, or annual basis over a user-specified time horizon.

3.2- Energy Forward and REC Price Curves

Three sources of data are used to generate the energy price forecast that would be the basis for energy values for the Power Planning Study. The three sources are: forward energy "broker" quotations provided by Tullet Liberty ("Tullet")[1]; natural gas futures and natural gas futures basis as reported by the New York Mercantile Exchange ("NYMEX"); and forecasted spot electricity and natural gas prices as provided by Ventyx semi-annual structural forecast (formerly Global Energy Decisions, GED).[2]

The derived natural gas price curve is made up of Henry Hub ("HH") futures prices, adjusted for a specific local Hub through using basis prices (for HH to SoCal, or HH to PG&E Citygate, in

[1] Tullet is among other things an energy brokerage company that matches buyers and sellers.

[2] Ventyx is forecasting the actual day-ahead cash price that will occur in the sport markets in the future, not the price at which futures or forward contracts should be priced.

this case). Basis prices represent the mark-up or discount in natural gas prices (due to transmission fees, congestion, etc.) at a specific hub, relative to prices at HH. For HH futures, prices are obtained from the NYMEX website, and are current market closing prices for the date when the forward curve is being generated. There are 12 to 13 years of HH futures prices that are available through the NYMEX. These prices are extrapolated to cover the 25 year period that matches the Ventyx structural forecast period. The extrapolation is done through computing the growth/escalation rate of the last 4 years of the current market price quotations, and using the computed growth/escalation rate to extend the last year's available market prices.

For basis prices, there are two data sources: one is market basis prices; and the other is a structural forecast of basis prices provided by Ventyx. Ventyx provides monthly basis prices for 25 years to match its structural forecast period, reflecting potential changes in the energy market and their impacts on a specific local Hub prices (relative to HH prices). Market basis are available from the NYMEX website, with basis prices available for three to five years (depending on the Hub location, whether it is SoCal or PG&E Citygate). The basis price forward curve is extrapolated to generate prices for a 25-year period by taking the last year's monthly quoted basis prices and repeating those prices for every month out to 25 years.

For SWP natural gas price forecast process, the average of the extended market basis and the structural basis (from Ventyx) is then taken and added to the Henry Hub extrapolated forward curve. The resulting natural gas forward curves for either SoCal or PG&E Citygate Hubs will be used in the study, where appropriate. The resulting natural gas forward curve for PG&E Citygate is shown in Figure-4, and is used for the NODOS Project Power Planning Study.

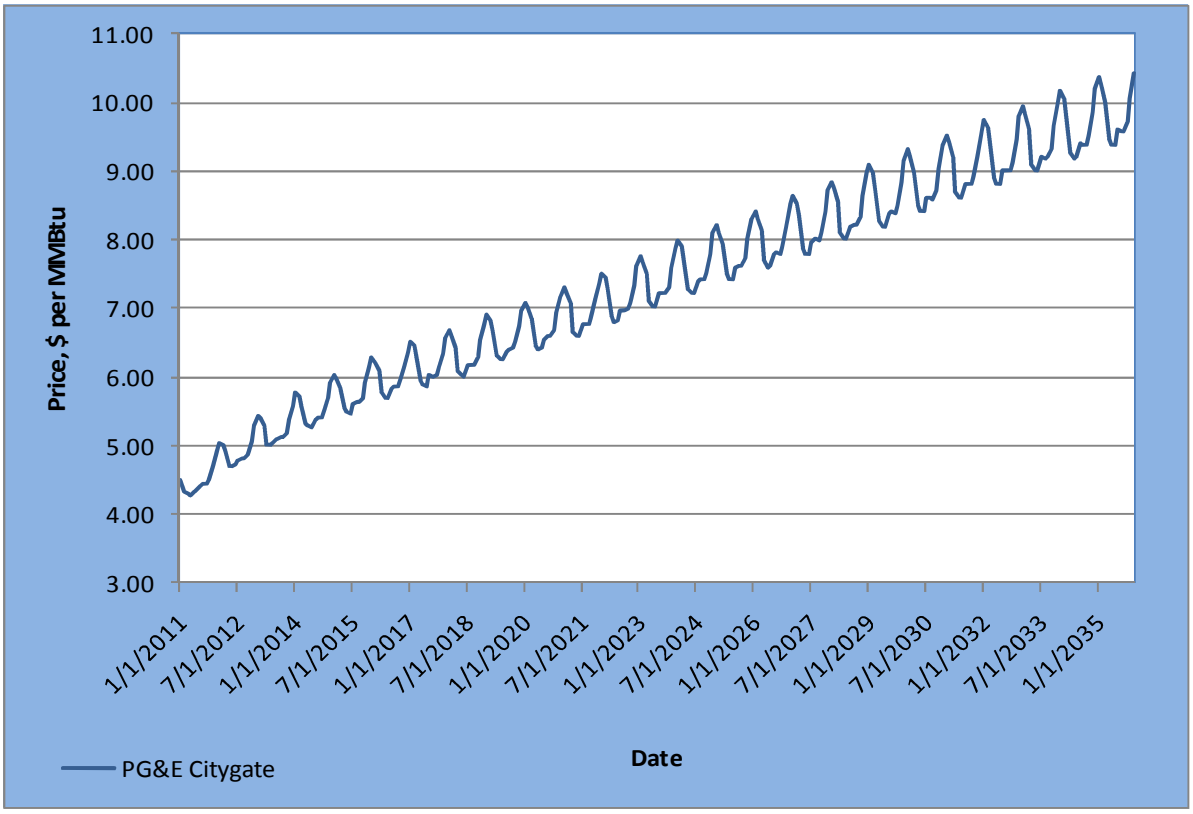

Figure 4- Natural Gas Price Forecast, Forward Curve for 2011 through 2040

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For the power price forecast, the derived power forward price curve is comprised of two segments: market forwards; and synthetic forwards. The first segment uses the most current Tullet energy forwards quotations, for NP-15 and SP-15 market's different products (On-Peak, Off-Peak). This segment runs anywhere from 12 to 24 months (data availability is dependent on time of year that the power forecast is being generated).

The second segment of the price curve is the "synthetic" portion. The "synthetic" segment continues where the first segment stops, to complete the 25 year period to match the natural gas forecast period. There are two approaches that are being used to derive the "synthetic" portion of the forward curve. One approach is to calculate power prices using the natural gas forecasted prices (as described above) multiplied by historical implied heat rates.[3] The other approach is to multiply the forecasted natural gas prices by a forecasted heat rate, reported as part of the structural forecast, by Ventyx. The average of those two generated power forward price curves yields the resulting "synthetic" forward curve, that make up the second segment of the power price forward curve. The same process is repeated for each of the CAISO markets and its specific products (On-Peak and Off-Peak), with the appropriate underlying fuel markets. The resulting power forward curve for NP-15 is shown in Figure-5, and is used for the NODOS Project Power Planning Study.

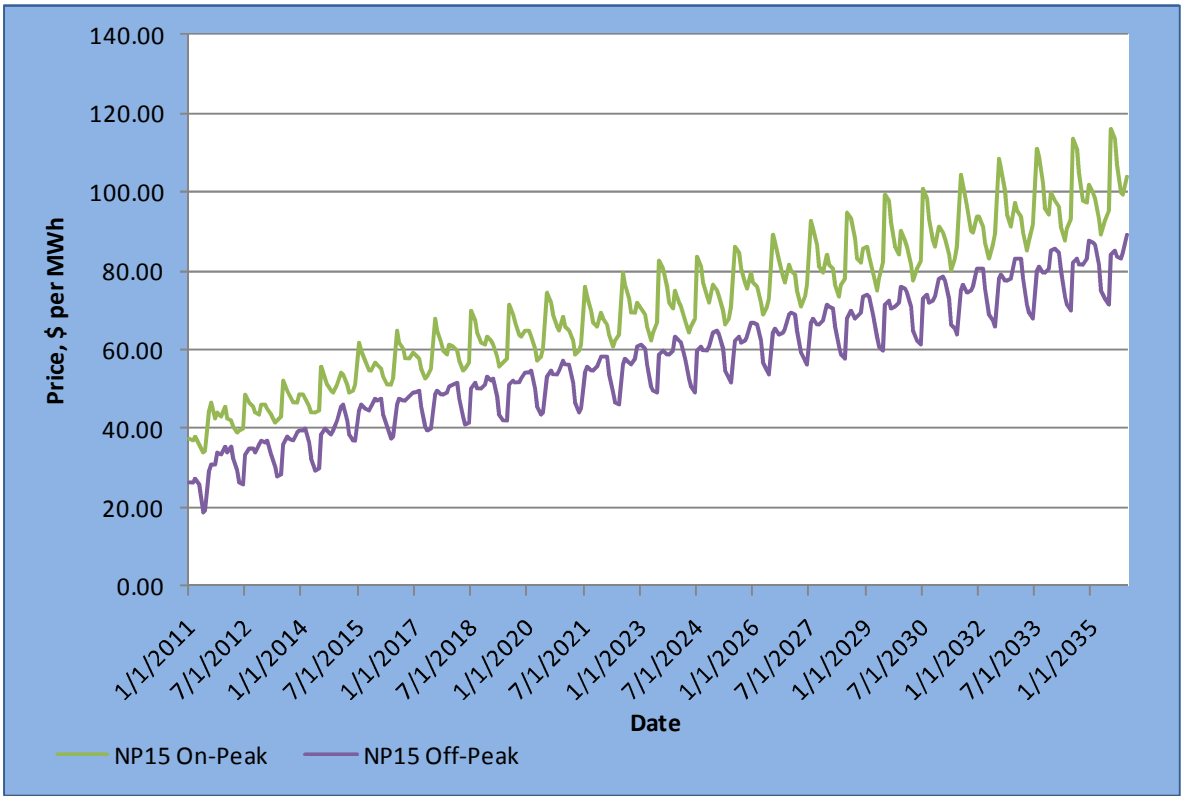

Figure 5- Power Price Forecast, Forward Curve for 2010 through 2039

[3] Historical implied heat rates were calculated from 2004 - 2008 historical price data (5 years). Daily prices were averaged into monthly prices. The heat rate is calculated as the respective period's power price divided by the respective period's gas price.

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For the Sacramento River (Alt A, and Alt C) and TRR Generation Plant future planned capacity (less than 30 MW) qualify both plants to meet the RPS certification requirements, and allow both plants to participate in the Renewable Energy Credit market (REC), a product of the RPS and the AB32 GHG mandates. For the purpose of this Study, power generation for the two plants mentioned above was valued based on the forecasted energy prices for the CAISO markets that the plant will participate in or has indirect exposure to (NP-15 market for power and PG&E Citygate market for natural gas), and the additional value that would be realized from the RECs that the two plants will produce. Hence, the power price forecast was adjusted to reflect the forecasted value of the RECs in WECC region as reported by Ventyx Spring 2011 forecast. The reported REC values are used to generate a power curve adjusted to reflect the total value of a MWh (energy+REC) generated at the TRR and Sacramento River generating plant. Figure 6 shows the REC values as reported in the Ventyx Spring 2011 forecast, and compared to the forecasted values from two previous Ventyx forecasts.

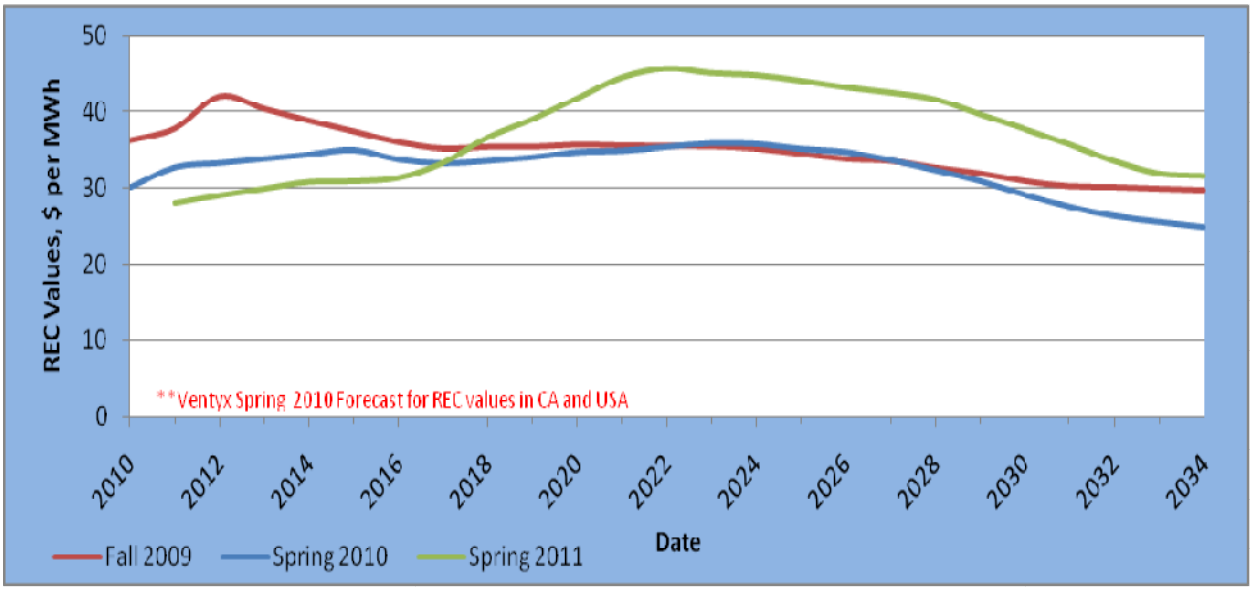

Figure 6 – Renewable Energy Credit Forecast for the WECC region for 2011 through 2034

4- NODOS Project formulation, Alternatives, and Operations

4.1- NODOS Project Alternatives

This section is a synopsis describing the NODOS Project development process, and is extracted from the main report titled "Definition of proposed alternatives for Evaluation in the North-of-the-Delta Offstream Storage Adminstrative Draft Environmental Impact Report and Statement, Date." More details on the evolution of the NODOS Project are discussed in the aforementioned Report.

Pursuant to NEPA and CEQA, a Notice of Intent and Notice of Preparation were filed and published in November 2001 by Reclamation and DWR respectively, to investigate surface storage opportunities north of the Delta. NEPA and CEQA require that EIS and EIRs consider a

reasonable range of feasible alternatives that could meet the project objectives and accomplish the project purpose and need while avoiding or minimizing environmental impacts. NEPA and CEQA also require that a No Action (NEPA) and No Project (CEQA) alternative be analyzed. The purpose of including a reasonable range of alternatives in EIS and/or EIR is to offer a clear basis for choice by the decision makers and the public as to whether to proceed with a proposed action or project. NEPA and CEQA requirements are discussed in greater detail in Chapter 1 of the NODOS EIR/S.

Three different configurations for the NODOS Project were combined with the anadromous fish measures and new hydropower facilities to develop the action alternatives summarized in Table 1 (Table 2-8). The alternatives include a No-Action Alternative Plan and three Action Alternative Plans. It was anticipated that these alternative plans and the No Action Alternative would provide a reasonable range of alternatives for further refinement and detailed analysis in the Feasibility Report and EIS/EIR, to meet the requirements of NEPA; CEQA; other pertinent federal, State, and local laws, regulations, and policies; and the Principles and Guidelines (P&Gs) presented in the U.S. Water Resources Council's Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies (U.S. Water Resources Council [WRC],1983).

The following sections provide further details on the components of the alternatives:

- No Action/No Project Alternative—The No Action/No Project Alternative assumes that no actions would be taken to provide storage north-of-the-Delta to improve water supply reliability, to enhance the survivability of anadromous fish or drinking water quality in the Delta, or to improve flexible generation.
- Alternative A: 1.27 MAF Sites Reservoir with Delevan Pipeline—Alternative A includes a 1.27 MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing TC and GCID canals and a new Delevan Pipeline (2,000-cfs diversion/1,500-cfs release). This alternative also includes new hydropower facilities and a program to address the three anadromous fish measures.
- Alternative B: 1.81 MAF Sites Reservoir with Release-only Delevan Pipeline—Alternative B includes a 1.81 MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing TC and GCID canals, and a new release–only Delevan Pipeline (1,500-cfs release). This alternative also includes new hydropower facilities and a program to address the three anadromous fish measures.
- Alternative C: 1.81 MAF Sites Reservoir with Delevan Pipeline—Alternative C includes a 1.81 MAF Sites Reservoir with conveyance to and from the reservoir provided by the existing TC and GCID canals and a new Delevan Pipeline (2,000-cfs diversion/1,500-cfs release). This alternative also includes new hydropower facilities and a program to address the three anadromous fish measures.

Major features of the various action alternatives are illustrated on Figure 2-4.

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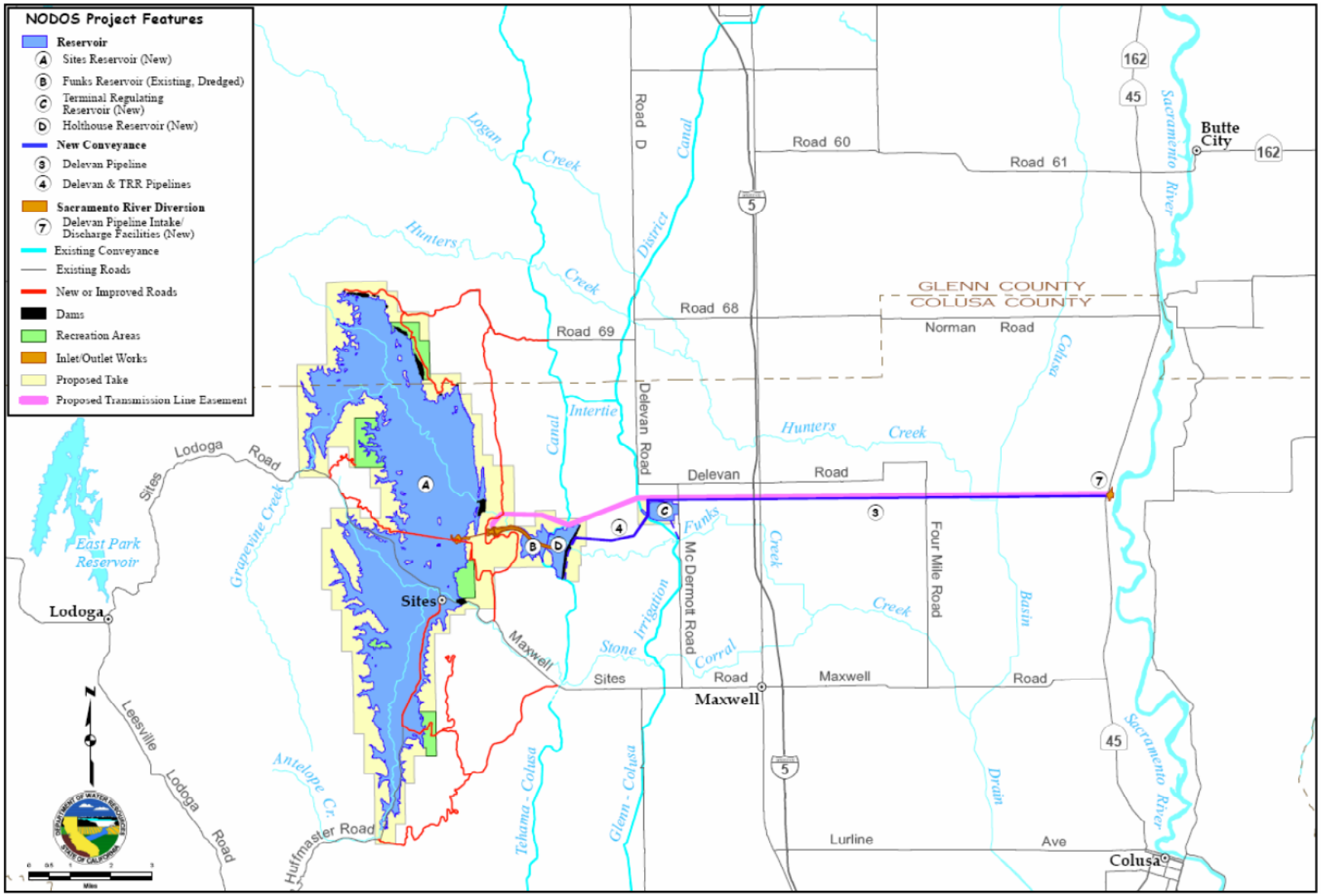


Figure 7- Major Features of the Actions Alternatives

Table 2-8. Project Features Included in the Alternatives

Alternative	A	B	C
Storage Capacity			
Sites Reservoir	1.27 MAF	1.81 MAF	1.81 MAF
Conveyance Capacities *(to Sites Reservoir)*[1]			
Tehama-Colusa Canal	2,100 cfs	2,100 cfs	2,100 cfs
Glenn Colusa Irrigation District Canal	1,800 cfs	1,800 cfs	1,800 cfs
New Delevan Pipeline[2] Diversion Release	 2,000 cfs 1,500 cfs	 0 cfs [3] 1,500 cfs	 2,000 cfs 1,500 cfs
Operations Priorities *(Primary Planning Objectives)*			
Long Term *(all years)*	EESA[4] Power[5]	EESA[4] Power[5]	EESA[4] Power[5]
Driest Periods *(drought years)*	M&I	M&I	M&I
Average to Wet Periods *(non-drought years)*	Water Quality Level 4 Refuge Agricultural	Water Quality Level 4 Refuge Agricultural	Water Quality Level 4 Refuge Agricultural
Nonoperational Actions			
Ecosystem Enhancement Fund	✔	✔	✔
Physical Features			
Golden Gate and Sites Dams	✔	✔	✔
Number of Saddle Dams	6	9	9
Recreation Areas	Up to 5	Up to 5	Up to 5
Road Relocations and South Bridge	✔	✔	✔
Sites PG Plant Capacities	5,900-cfs pumping capacity 5,100-cfs generating capacity	3,900-cfs pumping capacity 5,100-cfs generating capacity	5,900-cfs pumping capacity 5,100-cfs generating capacity
Sites Electrical Swtichyard	✔	✔	✔
Tunnel from Sites PG Plant to Sites Inlet/Outlet Structure	✔	✔	✔
Sites Reservoir Inlet/Outlet Structure	✔	✔	✔
Field Office Maintenance Yard	✔	✔	✔
Holthouse Reservoir Complex	✔	✔	✔
Pump Installation at the Red Bluff Pumping Plant	✔	✔	✔
GCID Canal Facilities Modifications	✔	✔	✔
GCID Connection to the TRR	✔	✔	✔
TRR	✔	✔	✔
TRR PG Plant	✔	✔	✔
TRR Pipeline	✔	✔	✔
Delevan Transmission Line	Sites Power Plant to PG&E line plus PG&E line to Sacramento River	Sites Power Plant to PG&E line	Sites Power Plant to PG&E line plus PG&E line to Sacramento River
Delevan Pipeline	✔	✔	✔
Delevan Pipeline Intake Facilities (Fish Screen and PG Plant)	2,000-cfs diversion capacity; 1,500-cfs release capacity		2,000-cfs diversion capacity; 1,500-cfs release capacity
Delevan Pipeline Discharge Facility		1,500-cfs release capacity	

Notes:
1. Diversions through the TC Canal, GCID Canal, and Delevan Pipeline are allowed in any month of the year; however, November through March is generally the season that Sites Reservoir will be filled.
2. New Delevan Pipeline can be operated June through March (April and May are reserved for maintenance).
3. A pump station, intake, and fish screens are not included for the Delevan Pipeline for Alternative B. For Alternative B, the Delevan Pipeline will be operated for releases only from Sites Reservoir to the Sacramento River year round.
4. Ecosystem Enhancement Storage Account (EESA) related operations are a function of specific conditions, and operating criteria that are defined uniquely for each action.
5. Includes dedicated pump/generation facilities with an additional dedicated after-bay/fore-bay of 6.5 TAF in Holthouse Reservoir (enlarged Funks Reservoir) used for managing conveyance of water between Sites Reservoir and river diversion locations.

Key:
cfs = cubic feet per second
CVP = Central Valley Project
EESA = ecosystem enhancement storage account
MAF = million acre-feet
M&I = municipal and industrial
SWP = State Water Project
TAF = thousand acre-feet

Table 1- NODOS Project Action Alternatives, Priorities, and Objectives

4.2- NODOS Project Operations – Water Operations

For the evaluation of NODOS Project action alternatives, the project team used a generally consistent operations strategy for each alternative. The operations strategy is reflected in the operations simulation modeling that is the primary planning tool to determine many of the project benefits and impacts. The ability of each action alternative to implement the strategy

effectively is subject to the conveyance options included and the coordinated operation of Sites Reservoir with other existing facilities.

The strategy has four components: (1) operating criteria for diversion of flows from the Sacramento River to fill Sites Reservoir; (2) operating criteria to achieve benefits associated with the primary objectives in drought (driest periods) and other hydrologic conditions; (3) integration and (4) coordination of Sites Reservoir releases with releases from Trinity Lake, Shasta Lake, Lake Oroville and Folsom Lake.

Each action alternative would be operated to divert Sacramento River flows to maximize the filling of Sites Reservoir as long as those flows were not needed to meet (1) existing CVP and SWP and other water rights diversions, (2) existing regulatory requirements including SWRCB D-1641, CVPIA 3406(b)(2), 2008 USFWS BO and 2009 NMFS BO and other instream flow requirements, and (3) flow conditions to minimize the impact of diversion operations on achieving the primary objectives for anadromous fish survival and Delta water quality. A schedule of flow criteria for Sacramento River flows at Red Bluff, Hamilton City, Wilkens Slough and Freeport are used to limit the impact of diversion operations. An additional set of criteria are used to identify and restrict diversions during potential pulse flow conditions to protect out-migrating anadromous fish.

Each action alternative would be operated to achieve benefits associated with the primary objectives in drought (driest periods) and other hydrologic conditions. For purposes of Sites Reservoir operation, drought (driest periods) hydrologic conditions are identified as the sequence of years in which the Sacramento River 40-30-30 year type classification (SWRCB D-1641) in two consecutive years is Critical following Critical, Dry or Above Normal, or Dry following Critical or Dry, or Above Normal following Critical year types. In drought (driest periods) hydrologic conditions, the priority operation is cold water pool conservation in Trinity Lake, Shasta Lake, Lake Oroville and Folsom Lake and regulation of summer flows for best use of cold water for control of temperature conditions adverse to anadromous fish and increasing Delta export and SWP project allocations to improve water supply reliability to South-of-the-Delta M&I water users. During these times, Sites Reservoir stored water is released into the system as rapidly as possible to meet these needs.

In other hydrologic conditions (non-drought), approximately one third of Sites Reservoir stored water is used each summer and fall to manage Delta water quality to improve Delta water quality at M&I intakes, to improve flows for Delta fisheries habitat based on X2 position, and to stabilize fall flows for improving spawning and rearing success of anadromous fish. Water quality for M&I users is improved both by improving Delta water quality at M&I intakes in non-drought conditions as well as increasing Delta exports in drought conditions (TDS levels in exports from the Delta are often lower than other supplies such as from the Colorado River; so there is a blending improvement by increase flows from the Delta).

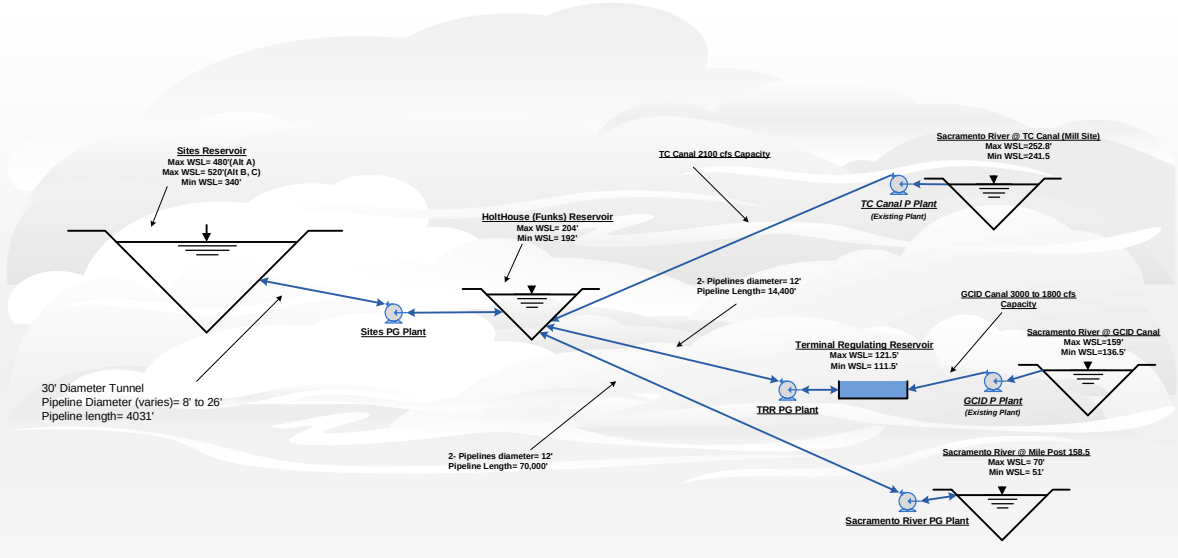
Each action alternative would be operated to integrate and coordinate the releases from Sites Reservoir with releases from Trinity Lake, Shasta Lake, Lake Oroville and Folsom Lake. Often, and especially in drought (driest periods) hydrologic conditions, releasing from Sites Reservoir, allows releases from other reservoirs to be reduced while still meeting requirements for minimum instream flow objectives and Delta salinity control objectives. Through this reduction in releases, storage can be conserved in Lake, Shasta Lake, Lake Oroville and Folsom Lake for later use for and management of releases. This improvement in storage conditions throughout

the system of reservoirs adds significantly to the operational flexibility to meet the primary objectives in the most effective way possible.

4.3- NODOS Project Operations - Power Operations

The NODOS Project team supplied PARO with the physical and operational attributes of the Project components which are the basis for this Study. The schematic drawing in Figure 8 shows the different NODOS Project components and the relative location and interconnection of the different components to each other and to the Sacramento River.

For the NODOS Project operations and for the purpose of this Study, the base assumptions and scenarios used in developing the CALSIM II model are maintained for the different project components. The CALSIM II model was used to simulate the operations of the NODOS Project, as a component of the integrated SWP and CVP operations. More details on the CALSIM II model formulation are available inNODOS EIR/S Appendix. The CALSIM II model is a tool that was setup to emulate the operations strategy setforth for the project, and to help determine many of the project benefits and impacts.



Plant Mode	Pumping Mode					Generation Mode		
Plant Name	TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Planned Capacity, MW	6	3.39	19.68	65.65	181.35	123	9.8	10.8
Planned Capacity, cfs	2250	3000	1890	2000	5900	5100	1500	1500

*** Note: Under Alt B, the Sacramento River will have no diversion pumps and only release facilities (No Pumping or Generation facilities)

Figure 8- NODOS Project, Schematic of Conveyance and Storage Interconnection

For the purpose of modeling the power operations of the NODOS Project, three modes for project operations are identified: Diversion mode (pumping from the Sacramento River to fill up Sites Reservoir); Release mode (generation incidental to water releases from Sites Reservoir to meet the NODOS Project water release objectives); and a Pumpback mode (to better utilize residual capacities of the different project components). The NODOS Project pumpback

operations is meant to enhance the project economics by capturing opportunities offered by the energy market (energy price differentials between On-Peak and Off-Peak hours, and Ancillary Services), and to provide the support/products needed to integrate renewable energy (Wind, solar, etc).

In modeling the power needs for the diversion mode, an optimization strategy is developed to minimize the energy costs of pumping operations, yet, maintain NODOS Project water operations objectives. Hence, flat monthly pumping operations are maintained (where/when applicable, 24 hrs a day, 7 days a week), for all three diversion points along the Sacramento River. Once water is diverted from the Sacramento River into Holthouse Reservoir, the rest of the diversion operations (i.e. pumping into Sites Reservoir) could be optimized to better utilize Sites pumping plant capacity, and the available storage in Holthouse Reservoir. It would be more economical to retain the On-Peak diversions from the Sacramento River in Holthouse Reservoir (as scheduled) and to pump that water into Sites Reservoir in the Off-Peak hours (on a daily basis). The intent of reshaping the diversion mode is to avoid high On-Peak (and Super Peak) electricity prices. Therefore, all pumping operations into Sites Reservoir are optimized to occur (if possible) during the Off-Peak hours (including shoulder hours). Moreover, this shift in operations will provide an opportunity to superimpose pumpback operations cycle on the NODOS Project diversion mode. In an optimized mode and in the On-Peak (or Super Peak) hours, Sites pumping-generating plant will be available for generation. In the Off-Peak hours, the residual pumping capacity will be available to pump the water back into Sites Reservoir.

For the water Release mode (Generation mode) of the NODOS Project, an optimization strategy is developed to maximize generation revenues from the project's generation assets. For this strategy and to the extent physically possible, all intended daily water releases from Sites Reservoir into Holthouse Reservoir will occur during the On-Peak (or Super Peak) hours, to capture the most value the energy market offers for the NODOS Project generation. Incidental to the On-Peak releases from Sites Reservoir into Holthouse Reservoir, water will be released into the Terminal Regulating Reservoir, TC Canal, and the Sacramento River up to the capacities of these facilities (and within the planned limits for the water release). The residual water in Holthouse Reservoir (from the On-Peak Sites Reservoir releases) would be released during the Off-Peak hours to satisfy water delivery obligations of the NODOS Project. A key requirement for this strategy to be effective is that Holthouse Reservoir active storage would be made available before the beginning of the next On-Peak cycle (i.e. next day's cycle). Optimizing the Release (generation) mode will better utilize Sites Reservoir generation capacity (maximize revenues), and provide an opportunity to superimpose a Pumpback mode on the Release mode.

A third component of the NODOS Project power operations is a daily pumpback operations cycle. For periods when the NODOS Project is in neither Diversion nor in Release modes, Sites Reservoir pumping and generation assets can operate in a pure Pumpback mode to take advantage of energy price differentials between the On-Peak and Off-Peak hours, and Ancillary market needs. Under a pure Pumpback mode, water would be released from Sites Reservoir into Holthouse Reservoir during the On-Peak (or Super Peak) hours to generate energy and would be pumped back into Sites Reservoir in the Off-Peak hours to complete the pumpback cycle. The pumpback operations could be a standalone operation and/or superimposed on the Diversion and Release modes when the energy market economics relative to the Sites Reservoir Plant's efficiency (cycle efficiency) are conducive to do that. At Sites Reservoir, the extent of the pure pumpback operations, and pumpback operations incidental to the NODOS Project Diversion and

Release modes are driven by market economics, pumping-generating cycle efficiency, residual pumping capacity, residual generation capacity, and residual storage capacity in Holthouse Reservoir.

5- Power Portfolio Model

Current Power Portfolio Models available to DWR's Power and Risk Office are used to execute the analysis for the NODOS Project. The operations of the NODOS Project's different assets are translated to a representative set of financial instruments and are input into the EPM model. The model is used to monetize the probabilistic value of the NODOS Project power portfolio for each of the action alternatives and operational scenarios used in the study. EPRI Fast Fit model, version 2.5, is used to describe the needed power and fuel price volatilities term structures, and the correlations between the different energy markets the NODOS Project will be participating in, or exposed to.

Using the most current CALSIM II model runs, a Median Case (seasonal cycle) operational time-series is defined, for each of the three action alternatives considered for the project. The Median Case time-series (sequential) period matches the 30-year planning period for the project. The time-series is derived from the 82-year time-series from the most current CALSIM II runs. The total water diversions (in acre-ft) from the Sacramento River into Sites Reservoir is used as a criteria for isolating the 30-year time-series that represents the Median Case project's operations, for each of the three action alternatives considered for the project. Moving averages and frequency analysis are used to reduce the 82-year record to 53 potential scenarios for the operations of the project. Then, the 53 scenarios are ranked, and the median of these scenarios is identified with the corresponding 30-year time-series that generated its value. The underlying 30-year time-series for all project's components is also identified and grouped, to represent the operations of the NODOS Project.

Time-series representing NODOS Project water diversions and releases are translated into pumping and generation capacities and Energy (MW and MWh) for each of the project components, using the appropriate design parameters and the physical attributes of the system. Figure 9 through Figure 15 show the Median Case time-series, for the 30-year planning period, for the "Optimized" operations of each of the NODOS Project components, in terms of utilized capacity in MW (which is the input to the EPM model), for Alt C.

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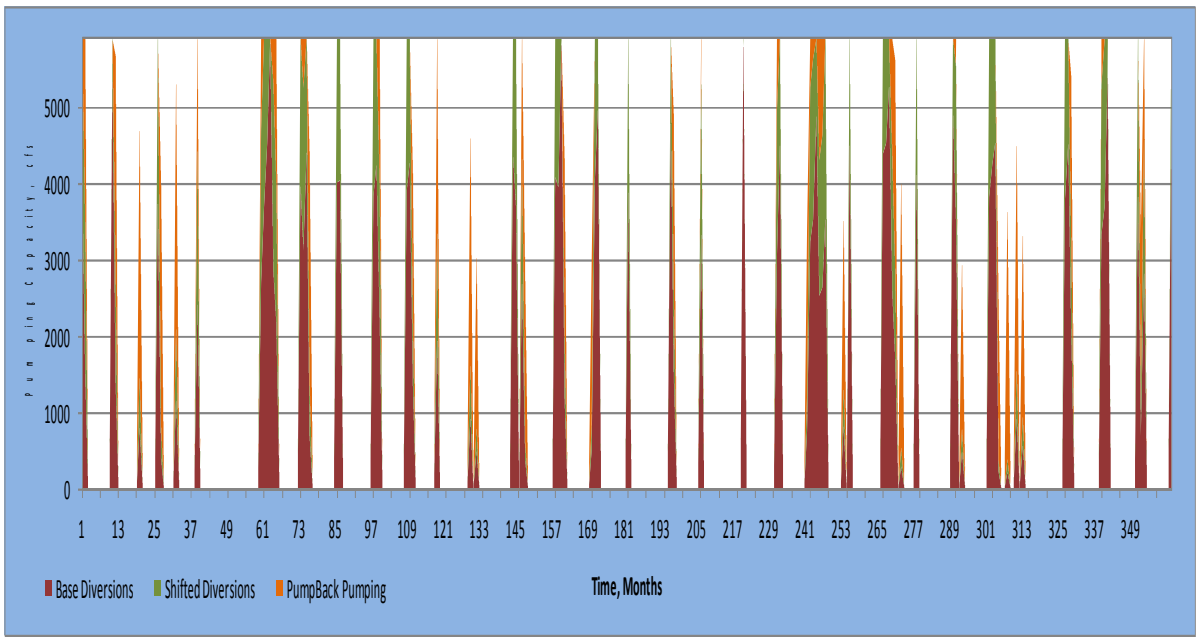

Figure 9- NODOS Project, Sites Reservoir Operations- Diversion Mode, Alt C

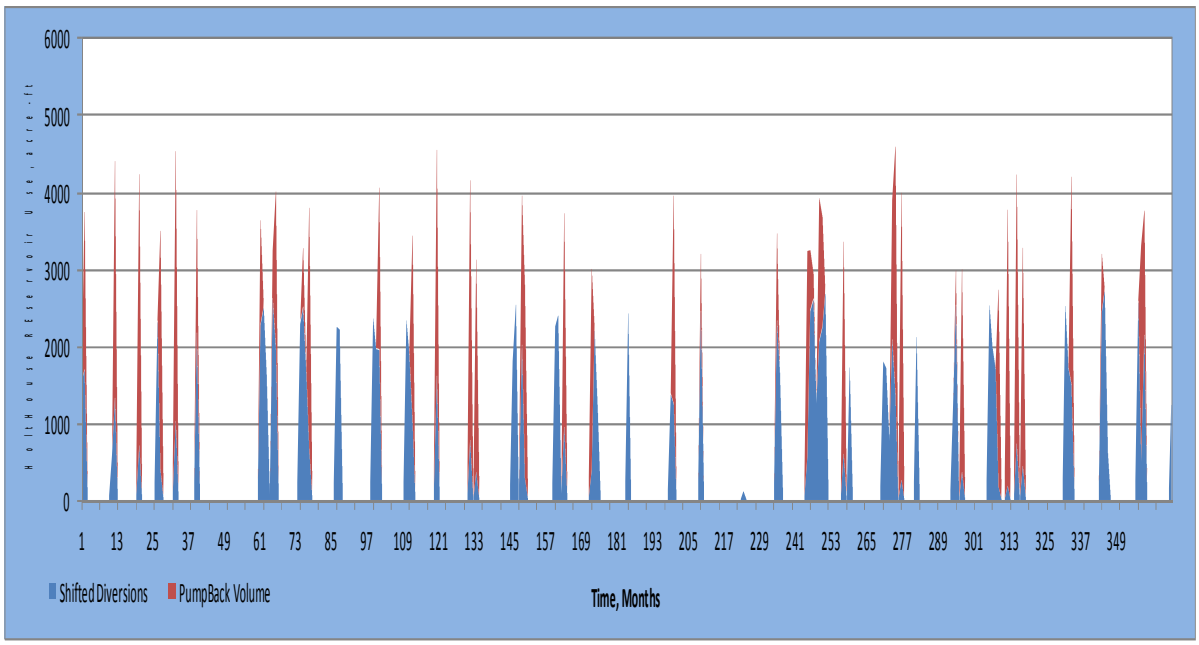

Figure 10- NODOS Project, Holthouse Reservoir Operations-Diversion Mode, Alt C

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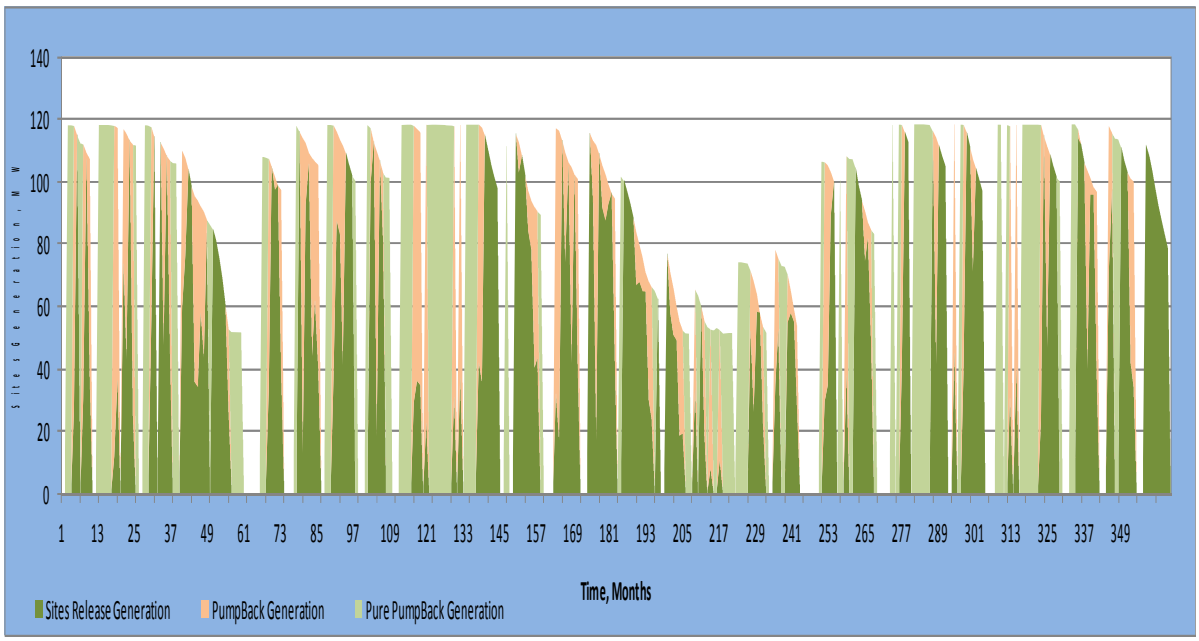

Figure 11- NODOS Project, Sites Reservoir Operations-Release & Pumpback Modes, Alt C

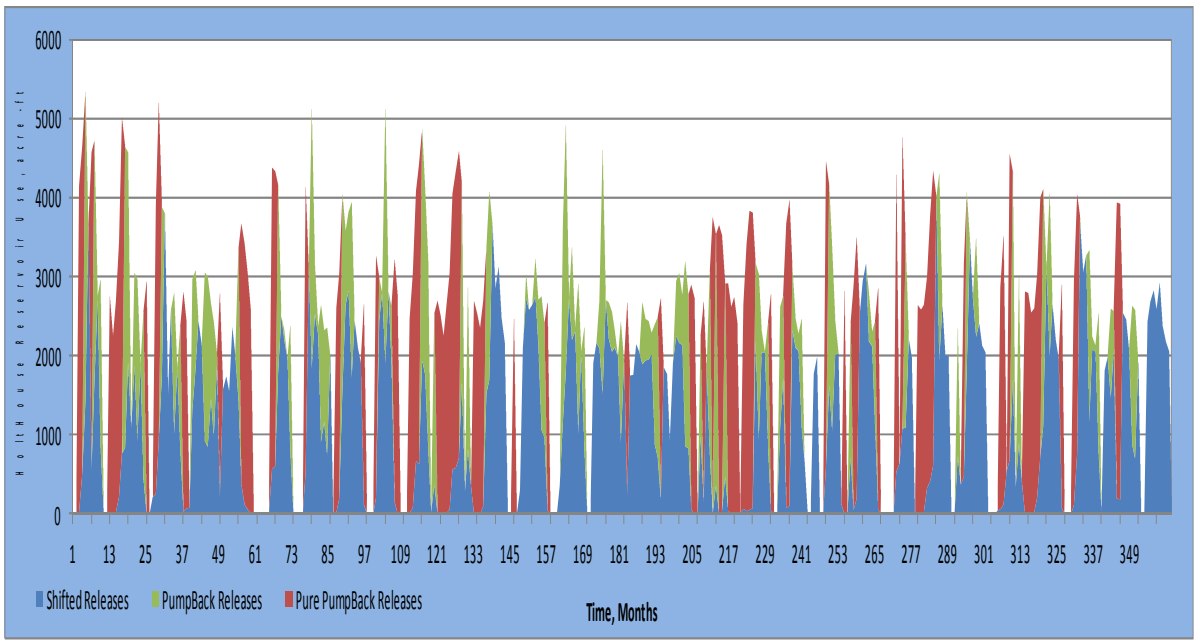

Figure 12- NODOS Project, Holthouse Reservoir Operations-Diversion Mode, Alt C

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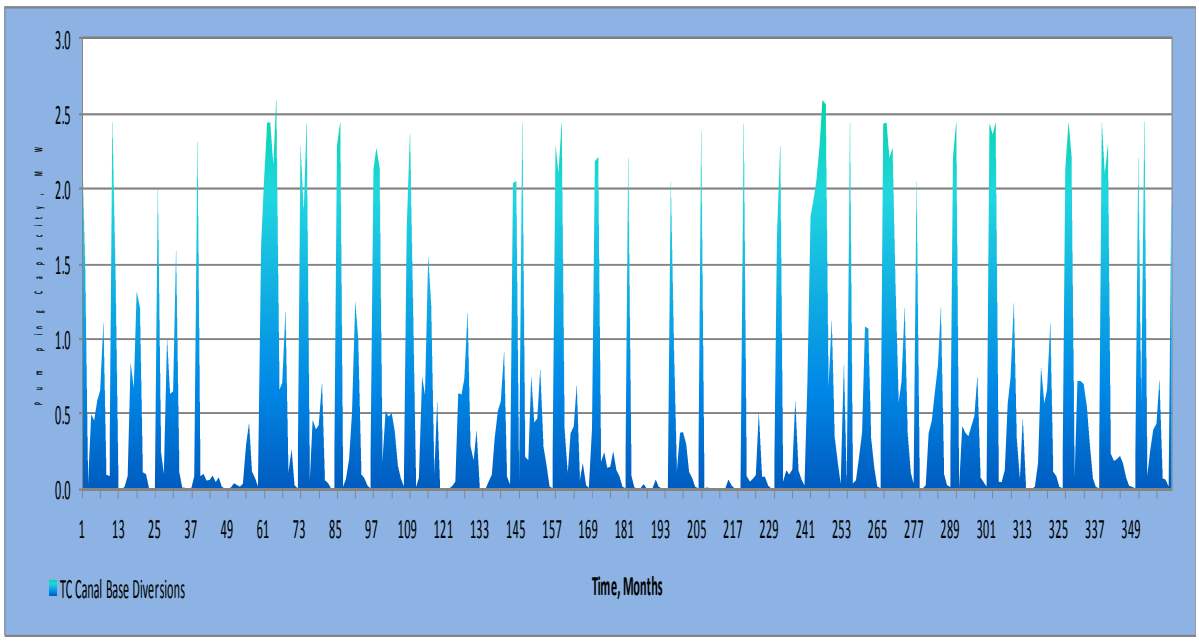

Figure 13- NODOS Project, TC Canal Pumping Plant Operations, Alt C

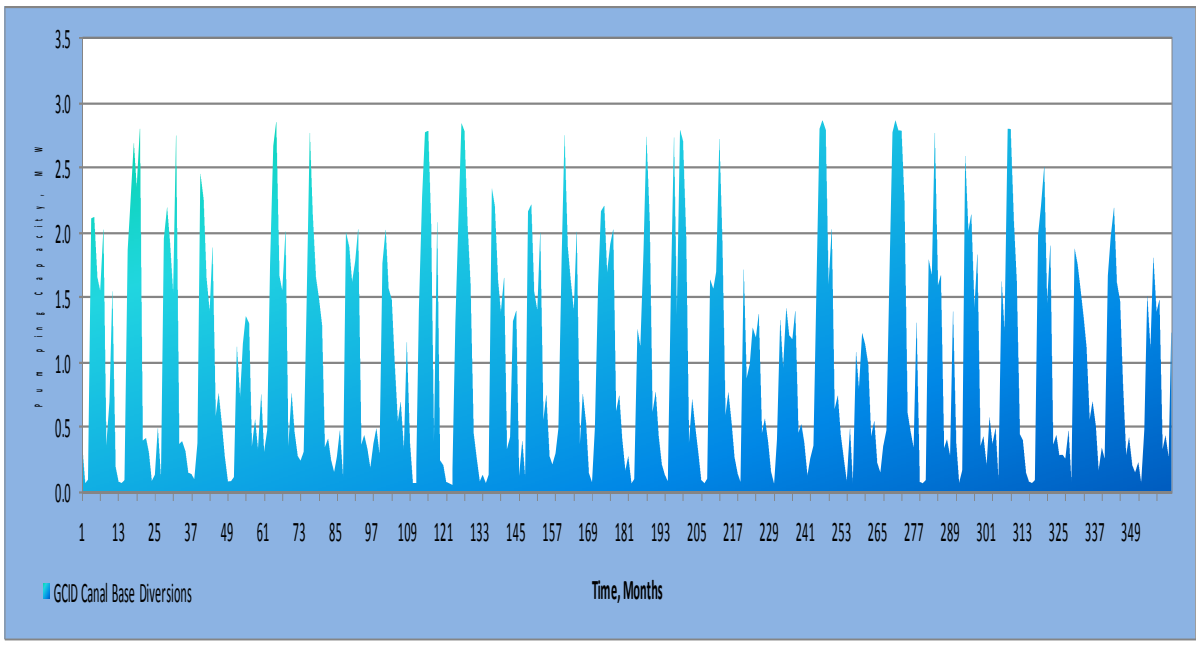

Figure 14- NODOS Project, GCID Canal Pumping Plant Operations, Alt C

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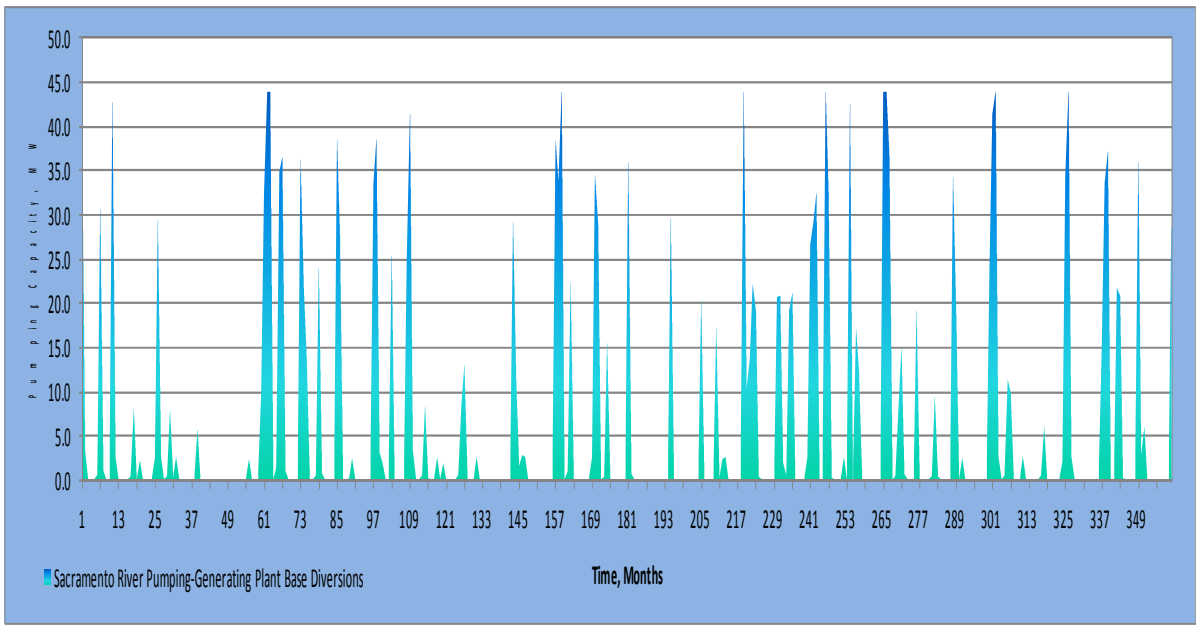

Figure 15- NODOS Project, Sacramento River Pumping Plant Operations, Alt C

Table 2 through Table 5 are summaries of the monthly, 30-year planning period, pumping and generation capacities used to model the Median Case of the NODOS Project operations (See Appendix for complete version of Table 2 through Table 5), For Alternative C of the three action alternatives considered for the NODOS Project. Two operational scenarios are used to model each of the three action alternatives considered for the Project, one is labeled as "Incidental," and a second one is labeled as "Optimized." For the "Incidental" scenario, pumping and generating at the different NODOS Project facilities are driven by water diversions and releases (i.e. "Incidental"). For the "Optimized" scenario, pumping and generating at the Sites Reservoir pumping-generating plant are optimized to minimize pumping costs obligations and maximize energy generation revenues for the Project. The modeling results are presented for both the "Incidental" and the "Optimized" operational scenarios to report the energy portfolio value, and describe the gain (monetary value) from optimizing the NODOS Project operations. The information in the aforementioned tables is the input data needed to run the EPM model. Different financial instruments were used in the EPM model to represent the power portfolio and to estimate the value of energy and risk associated with the operations of the project.

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		Incidental Pumping and Generation to Water Releases (no shaping)							
Plant Mode		Incidental Pumping , MW					Incidental Generation, MW		
Plant Name		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Installed Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Installed Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
1	744	2.28	0.37	2.73	39.11	118.75	0.00	0.00	0.00
2	672	1.46	0.06	0.00	3.13	44.87	0.00	0.00	0.00
3	744	0.03	0.09	0.00	0.00	0.11	0.05	0.00	0.00
4	720	0.49	2.11	0.00	0.00	0.63	0.37	0.00	0.00
5	744	0.45	2.12	0.00	0.00	0.00	2.52	0.40	0.40
6	720	0.59	1.66	0.00	0.53	0.00	36.39	7.38	6.41
7	744	0.65	1.55	0.00	30.75	0.18	60.89	7.30	0.00
8	744	1.10	2.03	0.00	1.01	0.00	12.45	0.60	4.96
9	720	0.09	0.35	0.00	0.00	0.00	23.79	1.52	9.10
10	744	0.08	0.69	0.00	0.00	0.00	12.94	0.16	5.11
11	720	2.44	1.55	12.30	42.85	151.73	9.86	0.00	0.00
12	744	1.39	0.19	0.00	2.52	41.50	0.02	0.00	0.00
13	744	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
14	672	0.00	0.06	0.00	0.00	0.00	9.91	0.00	0.00
15	744	0.01	0.09	0.00	0.00	0.09	2.12	0.00	0.00
16	720	0.08	1.87	0.00	0.00	0.81	26.21	0.00	0.00
17	744	0.83	2.25	0.32	0.33	1.53	1.43	0.05	0.00
18	720	0.66	2.70	0.00	8.05	0.00	0.71	1.26	0.07
19	744	1.31	2.35	0.00	0.00	0.00	3.19	1.21	3.96

CALSIM II Model Results = Monthly Pumping- Generating Operations 82-yr
Power Planning Study Results= Incidental and Optimized Operations, 30-yr Median Case Deliveries

Table 2- NODOS Project, Pumping and Generation Time Series, Incidental, Alt C

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Plant Mode		Optimized Pumping					
Plant Name		Sites					
Installed Capacity, MW		181.35					
Installed Capacity, cfs		MaxQ=5900 cfs					
Month	# of Hours	On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
1	744	79.00	32924	169.89	55732	2305	5900
2	672	0.00	0	104.73	30207	0	5900
3	744	0.00	0	0.00	0	0	0
4	720	0.00	0	0.00	0	0	0
5	744	0.00	0	0.00	0	0	0
6	720	0.00	0	0.00	0	0	0
7	744	0.00	0	0.00	0	0	0
8	744	0.00	0	0.00	0	0	0
9	720	0.00	0	0.00	0	0	0
10	744	0.00	0	0.00	0	0	0
11	720	110.00	45589	168.00	63794	3336	5900
12	744	0.00	0	80.24	30910	0	5680
13	744	0.00	0	0.00	0	0	0
14	672	0.00	0	0.00	0	0	0
15	744	0.00	0	0.00	0	0	0
16	720	0.00	0	0.00	0	0	0
17	744	0.00	0	0.00	0	0	0
18	720	0.00	0	0.00	0	0	0
19	744	0.00	0	0.00	0	0	0
20	744	0.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CALSIM II Model Results = Monthly Pumping- Generating Operations 82-yr
Power Planning Study Results= Incidental and Optimized Operations, 30-yr Median Case Deliveries

Table 3- NODOS Project, Pumping and Generation T-Series, Optimized Pumping, Alt C

Plant Mode		Optimized Genration, MW				
Plant Name		Sites				
Installed Capacity, MW		123.00				
Installed Capacity, cfs		MaxQ=5100 cfs				
Month	# of Hours	On-Peak, MW	On-Peak, MWh	Off-Peak, MW	On-Peak, cfs	Off-Peak, cfs
1	744	0.00	0	0.00	0	0
2	672	0.00	0	0.00	0	0
3	744	0.00	0	0.00	0	0
4	720	0.00	0	0.00	0	0
5	744	26.47	9818	0.00	1141	0
6	720	114.95	39777	0.00	5100	0
7	744	0.00	0	0.00	0	0
8	744	30.10	9261	0.00	1366	0
9	720	107.43	28368	0.00	5009	0
10	744	37.38	8916	0.00	1771	0
11	720	0.00	0	0.00	0	0
12	744	0.00	0	0.00	0	0
13	744	0.00	0	0.00	0	0
14	672	0.00	0	0.00	0	0
15	744	0.00	0	0.00	0	0
16	720	0.00	0	0.00	0	0
17	744	0.00	0	0.00	0	0
18	720	11.70	3508	0.00	503	0
19	744	36.38	10349	0.00	1579	0
20	744	0.00				

CALSIM II Model Results = Monthly Pumping- Generating Operations 82-yr
Power Planning Study Results= Incidental and Optimized Operations, 30-yr Median Case Deliveries

Table 4- NODOS Project, Pumping and Generation T-Series, Optimized Generation, Alt C

Daily pumpback operations of the NODOS Project facilities are modeled in three components. The three components are pumpback operations incidental to its Diversion mode, incidental to its Release mode, and pure pumpback operations. For the purpose of this study, the pure Pumpback mode is limited to the months that the monthly average diversions into the NODOS Project are less than 200 cfs. For each month of the 30-year planning period, the available generation, and pumping capacities at Sites pumping-generating plant are estimated based on the available head (level of Storage) at Sites Reservoir (from the previous month's operations). Then a dispatch profile for the daily pumpback operations is generated based on market opportunities, pumping-generation cycle efficiency, available pumping-generating capacities, and available storage at Holthouse Reservoir. Through the use of a complex modeling scheme, Sites Reservoir pumping-generating plant is economically dispatched in the NP-15 CAISO market. Ultimately, the model is set up to utilize the NODOS Project pumpback potential based on plant's availability and market economics. The Median Case dispatch profile for the pumpback operations for Alternative C of the NODOS Project is depicted in Figure 9 and Figure 12.

Additional information needed to run the EPM model includes forward energy prices, volatility term structure, correlations (between different underlying energy markets), delivery hours, and

generation blocks. All necessary information are either generated through the EPM model's graphic user interface, or externally developed and input into the model.

Plant Mode		Pump Back Operations, MW								
Plant Name		With Pump cycle			With Gen Cycle			Pure Pump Back		
Installed Capacity, MW		123.00			123.00			123.00		
Installed Capacity, cfs		MaxQ=5100 cfs			MaxQ=5100 cfs			MaxQ=5100 cfs		
Month	# of Hours	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs
1	744	0.00	0	0	0.00	0	0	0.00	0	0
2	672	51.61	16049	2226	0.00	0	0	0.00	0	0
3	744	0.00	0	0	0.00	0	0	118.32	35905	5100
4	720	0.00	0	0	0.00	0	0	118.34	34870	5100
5	744	0.00	0	0	91.65	33991	3959	0.00	0	0
6	720	0.00	0	0	0.00	0	0	0.00	0	0
7	744	0.00	0	0	0.00	0	0	112.55	33216	5100
8	744	0.00	0	0	82.05	25251	3734	0.00	0	0
9	720	0.00	0	0	1.96	518	91	0.00	0	0
10	744	0.00	0	0	70.16	16733	3329	0.00	0	0
11	720	0.00	0	0	0.00	0	0	0.00	0	0
12	744	117.71	26633	5100	0.00	0	0	0.00	0	0
13	744	0.00	0	0	0.00	0	0	118.39	24019	5100
14	672	0.00	0	0	0.00	0	0	118.39	17722	5100
15	744	0.00	0	0	0.00	0	0	118.39	23223	5100
16	720	0.00	0	0	0.00	0	0	118.41	27197	5100
17	744	0.00	0	0	0.00	0	0	118.34	36952	5100
18	720	0.00	0	0	106.45	31919	4597	0.00	0	0
19	744	0.00	0	0	81.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

CALSIM II Model Results = Monthly Pumping- Generating Operations 82-yr
Power Planning Study Results= Incidental and Optimized Operations, 30-yr Median Case Deliveries

Table 5- NODOS Project, Pumping and Generation T-Series, Pumpback Operations, Alt C

6-Modeling Results

6.1- Power Portfolio Energy Value

A summary of the EPM modeling results (energy value and risk) for the three action alternatives (Alternatives A, B, and C) considered in this Study is shown in Table 6. The results in Table 6 are in $1,000 of Net Present Value (NPV), for the 30-years planning period, for each of the Project's cycles, and components. For the purposes of this Study, NPV is defined as the current market value of the net portfolio's cash flows in $1,000 of present value. The results are grouped based on the operational cycle of the Project facilities. The basic assumption is that pumping at all Project diversion points along the Sacramento River is incidental to water operations (flat operations). Also assumed, pumping and generating at Sites Reservoir pumping-generating plant can be optimized and may include a pumpback operations component. Optimizing operations is conditional to maintaining the NODOS Project water delivery objectives, at all times. During pumpback operations, power generation is mainly driven by plant's availability, and energy market price signals. As mentioned earlier, two operational scenarios are used to model each of the three action alternatives considered for the Project, one is labeled as "Incidental," and a second one is labeled as "Optimized." For the "Incidental" scenario, pumping and generating at the different NODOS Project facilities are driven by water diversions and releases (i.e. "Incidental," and no reshaping). For the "Optimized" scenario, pumping and generating at the Sites Reservoir pumping-generating plant are optimized to minimize pumping obligations (costs) and maximize energy generation revenues for the Project. The modeling results are presented for both the "Incidental" and the "Optimized" operational

scenarios in Table 6 to report the energy portfolio value, and describe the monetary value of optimizing the NODOS Project operations. Revenues from pumpback operations are presented separately to allow for better breakdown of costs and revenues from Project's water diversions and releases. In studying the modeling results, it is important to keep in mind that modeling of the Project operations is meant to monetize the energy costs and revenues, and not the water use benefits of the Project. Also it should be noted that pumping costs and generating revenues are impacted by water surface elevations at Sites Reservoir, resulting from the different configurations and System wide water operations for each of the three action alternatives for the NODOS Project (Alt A compared to Alt C). Another note, pumpback operations will net more revenues under alternatives with less water deliveries (Alt A compared to Alt C) because of the fact that NODOS Project assets would be less utilized, and more opportunity (percent of time) exist for pumpback operations.

Portfolio NPV Comparison- Modeled CALSIM Deliveries Scenarios						
Pumping-Generation Site	CALSIM Deliveries					
Planning Alternative	Alt A		Alt B		Alt C	
Operations Strategy	Incidental	Optimized	Incidental	Optimized	Incidental	Optimized
NODOS Pumping	Period Total, NPV ($1000)					
TC Canal Pumping	-6,085	-6,085	-7,511	-7,511	-5,786	-5,786
GCID Pumping	-10,083	-10,083	-11,519	-11,519	-9,964	-9,964
Sac River Pumping	-53,500	-53,500	N/A	N/A	-59,196	-59,196
TRR Pumping	-9,939	-9,939	-16,454	-16,454	-11,839	-11,839
Sites Pumping	-149,357	-137,397	-147,694	-133,100	-172,219	-157,841
Subtotal	-228,964	-217,004	-183,178	-168,584	-259,004	-244,626
	Preliminary Results					
NODOS Generation	Period Total, NPV ($1000)					
Sites Geneneration	109,077	121,405	111,262	125,493	134,216	149,580
TRR Generation	19,651	20,400	6,839	7,146	20,385	21,243
Sac River Generation	49,873	49,873	N/A	N/A	50,197	50,197
Subtotal	178,601	191,678	118,101	132,639	204,798	221,020
NODOS PumpBack Operations	Period Total, NPV ($1000)					
PumpBack during Diversion cycle	N/A	7,031	N/A	13,999	N/A	7,444
PumpBack During Release Cycle	N/A	23,000	N/A	18,299	N/A	21,564
Pure PumpBack Operations Cycle	N/A	17,435	N/A	14,916	N/A	17,395
Subtotal		47,466		47,214		46,403
NODOS Project Portfolio Value	-50,363	22,140	-65,077	11,269	-54,206	22,797
NODOS Project Optimization Potential		72,503		76,346		77,003
NODOS Risk Metrics	Period Total, NPV ($1000)					
Value-at-Risk	1,863	2,336	1,523	2,425	1,644	2,504
Cash-Flow-at-Risk	94,976	96,161	112,192	117,079	107,668	113,228

Notes
Cash Flow reported pre-tax in PV($000).
Evaluation performed 06/17/2011
Report updated at 03:40:00 PM.
Sac River Generation is not optimized to minimize the impact of headloss at higher releases thru the plant

Table 6- NODOS Project, Summary Modeling Results, NPV ($1000)

For ALT A "Incidental" operations, the 30-year total pumping costs (for the Median Case of Project diversions) of the NODOS Project in NPV are $228,964,000, whereas the corresponding energy generation revenues incidental to Project releases in NPV are $178,601,000. For ALT A "Optimized" operations, the 30-year total pumping costs (for the Median Case of Project diversions) of the NODOS Project in NPV are $217,004,000, whereas the corresponding energy generation revenues from optimized Project releases in NPV are $191,678,000. For the "Optimized" operations, additional revenues in NPV of $47,466,000 would be realized from the pumpback operations (daily operations). Pumpback operations and revenues are a combination of pumpback operations superimposed on the generation and pumping cycles, and pure pumpback operations in months that the Project's average diversion is less than 200 cfs (i.e. Project assets are not in use). It should be noted that for the "Incidental" operations the assumption was that no pumpback operations will take place (project assets are tied up in flat operations).

For ALT B "Incidental" operations, the 30-year total pumping costs (for the Median Case of Project diversions) of the NODOS Project in NPV are $183,178,000, whereas the corresponding generation revenues incidental to Project releases in NPV are $118,101,000. For ALT B "Optimized" operations, the 30-year total pumping costs (for the Median Case of Project diversions) of the NODOS Project in NPV are $168,584,000, whereas the corresponding generation revenues from optimized Project releases in NPV are $132,639,000. For the "Optimized" operations, additional revenues in NPV of $47,214,000 would be realized from the pumpback operations (daily operations).

For ALT C "Incidental" operations, the 30-year total pumping costs (for the Median Case of Project diversions) of the NODOS Project in NPV are $259,004,000, whereas the corresponding generation revenues incidental to Project releases in NPV are $204,798,000. For ALT C "Optimized" operations, the 30-year total pumping costs (for the Median Case of Project diversions) of the NODOS Project in NPV are $244,626,000, whereas the corresponding generation revenues from optimized Project releases in NPV are $221,020,000. For the "Optimized" operations, additional revenues in NPV of $46,403,000 would be realized from the pumpback operations (daily operations).

For the 30-year planning period, optimizing the NODOS Project operations (as described in Section 4.3) resulted in additional revenues for the project in NPV totaling $72,503,000 for Alternative A, $76,343,000 for Alternative B, and $77,003,000 for Alternative C. For all three action alternatives considered for the NODOS Project, optimizing operations resulted in changing the net project cash flow from a negative to a positive cash flow which would significantly enhance the economics of the project. For the NODOS Project "Incidental" operations, the net total Project's Power Portfolio value (generation revenues minus pumping costs) (for the Median Case of Project Diversions) in NPV is $-50,363,000, $-65,077,000, and $-54,206,000 for Alternatives A, B, and C, respectively. Whereas, for the NODOS Project "Optimized" operations, the net Project's Power Portfolio value (generation revenues-pumping cost) (for the Median Case of Project Diversions) in NPV is $22,140,000, $11,269,000, and $22,797,000 for Alternatives A, B, and C, respectively.

Table 6 provides a summary breakdown of the contributions of each Project component, and in each of the Project's operational modes (pumping, generating, and pumpback cycles).

Table 7 and Table 8 are the NODOS Project Power Portfolio annual cash flow, in present value in $1,000s, for the Median Case of deliveries, for Alt C of the project (complete version of these tables for all three action alternatives are in Appendix B). The annual cash flows are reported, in present value, through the 30-year planning period of the Project. The cumulative value of the cash flows in present value for each Project component represents the NPV of that component. The sum of the NPV of all Project components is the net total value of the Project for that specific alternative and specific operational scenario.

Cash Flow Report for the NODOS Project, CALSIM 30-Yr Planning Period, Alt C (Incidental Operations) Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total	Period Total, NPV ($1000)							
TC Canal Pumping	-5,788	-279	-128	-180	-80	-82	-411	-251	-238
GCID Pumping	-9,968	-306	-375	-347	-349	-231	-431	-355	-335
Sac River Pumping	-59,196	-3,040	-273	-1,227	-155	-370	-5,674	-2,940	-1,998
TRR Pumping	-11,839	-410	-204	-295	-28	-180	-1,057	-657	-159
Sites Pumping	-172,219	-9,319	-823	-4,546	-1,836	-1,298	-11,927	-9,489	-6,630
Subtotal	-259,010	-13,354	-1,803	-6,595	-2,448	-2,161	-19,500	-13,692	-9,360
NODOS Generation	Period Total	Period Total, NPV ($1000)							
Sites Geneneration	134,217	3,210	2,997	5,049	6,577	4,109	3,477	4,764	6,204
TRR Generation	20,385	723	438	981	765	1,128	807	1,246	963
Sac River Genenration	50,193	1,191	1,147	1,384	3,310	2,147	1,742	1,635	1,880
Subtotal	204,795	5,124	4,582	7,414	10,652	7,384	6,026	7,645	9,047
PumpBack Operations	Period Total	Period Total, NPV ($1000)							
PumpBack during Diversion cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumpBack During Release Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pure PumpBack Operations Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NODOS Project Total	-54,215	-8,230	2,779	819	8,204	5,223	-13,474	-6,047	-313

30-year Planning Period

NPV, is the current market value of the Net Portfolio's Cash flows in $1000

Notes
Cash Flow reported pre-tax in PV($000).
Evaluation performed 07/07/2011
Report updated at 10:28:53 AM.

Table 7- NODOS Project, Modeling Results, Annual Cashflow, Incidental Ops, Alt C

Cash Flow Report for the NODOS Project, CALSIM 30-Yr Planning Period, Alt C (Optimized Operations) Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total	Period Total, NPV ($1000)							
TC Canal Pumping	-5,788	-279	-128	-180	-80	-82	-411	-251	-238
GCID Pumping	-9,968	-306	-375	-347	-349	-231	-431	-355	-335
Sac River Pumping	-59,196	-3,040	-273	-1,227	-155	-370	-5,674	-2,940	-1,998
TRR Pumping	-11,839	-410	-204	-295	-28	-180	-1,057	-657	-159
Sites Pumping	-157,842	-8,578	-627	-3,872	-1,587	-1,105	-10,846	-8,646	-5,958
Subtotal	-244,633	-12,613	-1,607	-5,921	-2,199	-1,968	-18,419	-12,849	-8,688
NODOS Generation	Period Total	Period Total, NPV ($1000)							
Sites Geneneration	149,578	4,268	3,456	5,915	7,547	4,251	4,017	5,702	7,137
TRR Generation	21,249	781	480	1,032	799	1,151	843	1,307	1,015
Sac River Genenration	50,193	1,191	1,147	1,384	3,310	2,147	1,742	1,635	1,880
Subtotal	221,020	6,240	5,083	8,331	11,656	7,549	6,602	8,644	10,032
PumpBack Operations	Period Total	Period Total, NPV ($1000)							
PumpBack during Diversion cycle	7,445	213	470	623	96	49	214	239	0
PumpBack During Release Cycle	21,566	1,717	1,412	563	824	276	401	1,371	998
Pure PumpBack Operations Cycle	17,395	323	1,571	775	278	642	1,054	0	410
Subtotal	46,406	2,253	3,453	1,961	1,198	967	1,669	1,610	1,408
NODOS Project Total	22,793	-4,120	6,929	4,371	10,655	6,548	-10,148	-2,595	2,752

30-year Planning Period

NPV, is the current market value of the Net Portfolio's Cash flows in $1000

Notes
Cash Flow reported pre-tax in PV($000).
Evaluation performed 07/07/2011
Report updated at 10:28:53 AM.

Table 8- NODOS Project, Modeling Results, Annual Cashflow, Optimized Ops, Alt C

Figure 16 and Figure 17 graphically depicts the Alt C NODOS Project Power Portfolio cash flows in each delivery period for the 30-year horizon modeled in EPM, for the Median Case of deliveries, and for both "Incidental" and "Optimized" operations. The solid "diamond" markers represent the present value of the Portfolio's cash flow for a specific period. And the High and Low "error" bars correspond to the upper and lower percentiles of the cash flow distribution estimated using the Monte-Carlo simulation. The error bars correspond to the 95% and 5% confidence limits of the cash flow distribution for that specific period.

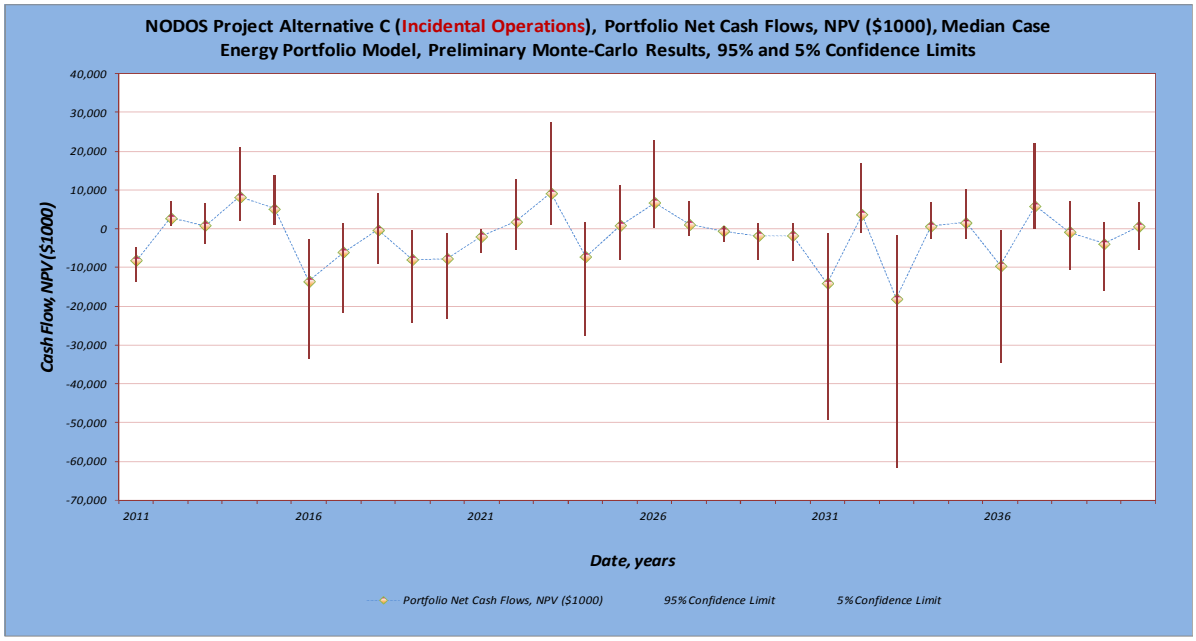

Figure 16- NODOS Project, Portfolio Cash Flow at Risk, Incidental Operations, Alt C

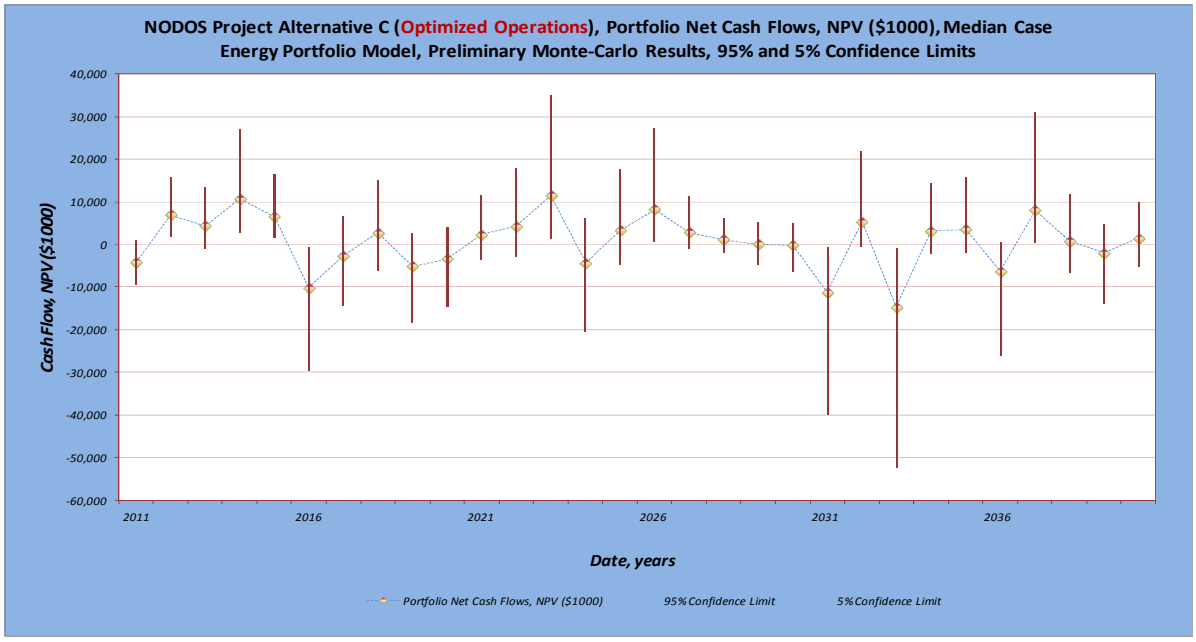

Figure 17- NODOS Project, Portfolio Cash Flow at Risk, Optimized Operations, Alt C

6.2- Power Portfolio Risk Metrics

EPM model results, also, include a description of the financial risk resulting from uncertainty and volatility of the underlying fuel and power markets, in which the NODOS Project will be participating. The EPM model produces risk metrics associated with a portfolio of assets that correspond to the exposure of an individual asset in a portfolio, or risk metrics that describe the collective risk associated with the portfolio, as a whole. The EPM model uses a Monte-Carlo based algorithm (random generation based) to generate a pre-assumed log-normal distribution of the expected cash flow of an asset. The generated distribution is based on the specific period's marginal volatility, time to delivery, and the analysis date. The number of draws for the Monte-Carlo approximation (2,000 draws are being used for this Study), the specified confidence level (95% is being used for this Study), the volatility and correlations of the underlying markets, and the holding period, (all are input parameters to EPM) are the basis for the Monte-Carlo generated distribution of the cash flow of an asset. Financial risk associated with an asset or a portfolio of assets could be measured from the Monte-Carlo generated distribution.

Two commonly used risk metrics in describing the financial risk associated with a portfolio are the Value-at-Risk, and Cash-Flow-at-Risk. Value-at-Risk is a measure of the potential for loss on a Portfolio of assets or an asset value, within a specified holding period. Value-at-Risk is a commonly used risk metric to describe the risk associated with the value of a portfolio of assets within a short period of time (days). A second risk metric is a Cash-Flow-at-Risk, and is defined as the maximum loss that could be realized over a specified holding period at a specified confidence level. Other risk metrics, such as Price Exposure, could also be reported, as partial output of the EPM risk report. Price Exposure measures an asset exposure to a specific price risk, and reports how many dollars of the value of that asset is at stake.

For Alt C of the NODOS Project, the Power Portfolio cumulative probability distribution is depicted in Figure 18, for both the "Incidental" and "Optimized" operations. The Monte-Carlo simulation provides the cumulative probability distribution of the NODOS Project Power Portfolio's cash flows around its mean value. On Figure 18, the Cash-Flow-at-Risk could be measured from the difference in NPV of Portfolio cash flows between the 50% and the 0% probabilities, for the pre-specified confidence level (95% in this case). Cash-Flow-at-Risk for a specific period could also be generated. The annual Cash-flow-at-Risk is graphically depicted on Figure 16 and Figure 17, as the difference between the "Diamond" markers and the lower end of the error bar, for that specific period. Value-at-Risk and Cash-Flow-at-Risk of the NODOS Project are summarized, for the three action alternatives, in Table 6.

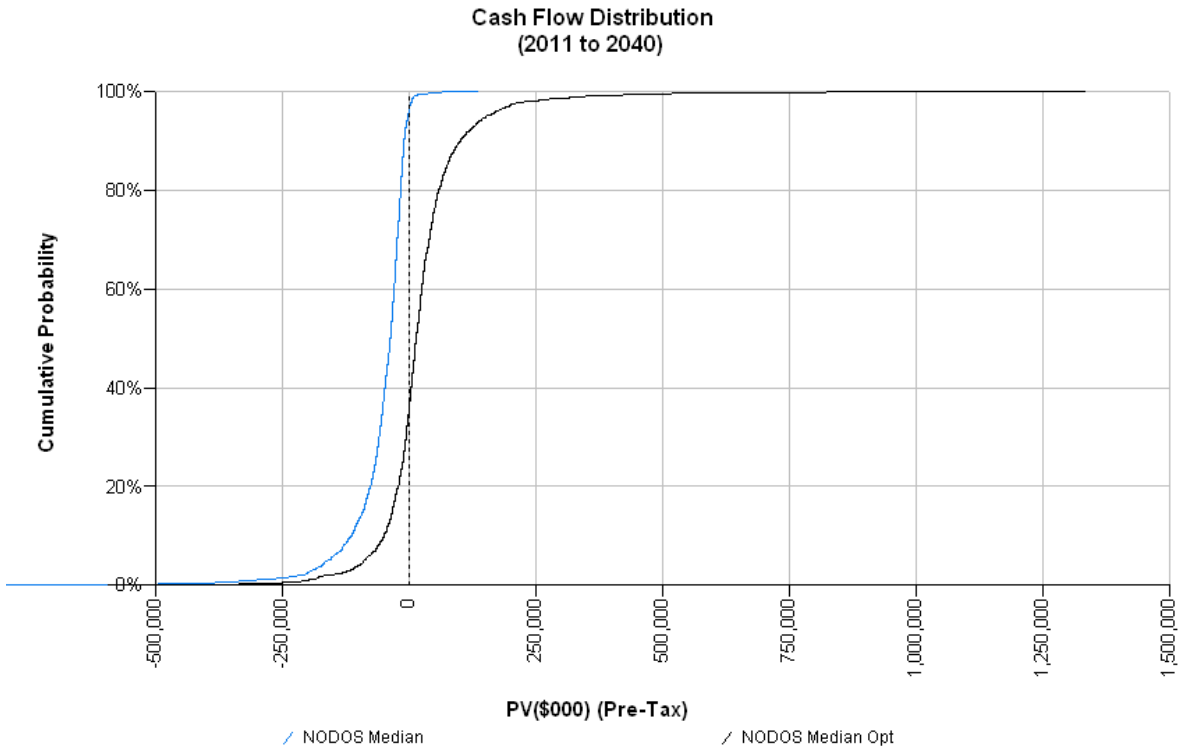

Figure 18- NODOS Project, Cumulative Cash Flow Distribution Comparison

7- NODOS Project Capacity and Ancillary Services

7.1- Capacity Value Analysis

CAISO is charged, under both California law and by the Federal Energy Regulatory Commission (FERC), with the responsibility of maintaining and operating a reliable grid system (transmission system) – a system that is under their operational control. System reliability is a very complex subject, as it is inextricably intertwined with market economics-a subject that is beyond the scope of this Study. Nevertheless, a crucial element of reliable grid operations, and relevant to the NODOS Project operations, is Resource Adequacy (RA). CAISO through their FERC approved Tariff, along with RA requirements by adopted State CPUC mandates, are intended to establish a process that ensures that capacity procured for RA purposes is available when and where it is needed. For the NODOS Project, RA obligations are a pseudo financial obligation in pumping/diversion cycle (Self-Provided), and a revenue opportunity in generation/release cycle.

There are several ways through which capacity value of a power asset can be harnessed. One way is the consideration of RA capacity value utilization. The state of California has embraced an RA mandate/regime (AB380) in order to make power resources available when and where they are needed, and to promote investment in new resources and maintenance of existing facilities. The California Public Utilities Commission (CPUC) governs the RA program for entities under its jurisdiction and the CAISO monitors the RA program implementation by utilities, including publicly owned utilities and government agencies. Currently, RA capacity is being traded bilaterally through a solicitation and bidding process and the price of capacity negotiation is opaque. However, the CAISO Tariff requires the CAISO to procure capacity as a

backstop, should a load serving entity fail to meet its RA obligation showings, and for within the month exceptional dispatch requirements. The RA obligation showings take place in an annual showing, as well as monthly showings. The FERC has authorized the CAISO to charge or pay the default RA capacity procurement price of $67.5/KW-year (pending FERC approval). In terms of capacity rate determination needed to estimate RA revenues and/or obligations, three options can be considered:

1) Bilateral trade capacity value: It is not transparent and the rate at which the capacity is procured is unknown. It could be lower in some months and higher during summer months (seasonal trend).
2) Default Capacity Procurement Mechanism (CPM) procurement rate: The FERC approved CAISO tariff rate of $67.5/KW-year (pending FERC approval) is the backstop procurement rate. It is constant for all the months, and represents an implied cap on RA value in the CAISO market. This default rate is subject to change in future stakeholder processes at the CAISO and subsequent FERC approval. Also, there is little chance that an asset can realize this level of capacity payment because of the narrow CAISO capacity market at the CPM rate.
3) Based on escalated 2009 CEC costs of generation technologies: Capacity value would be the revenue stream from selling capacity needed to make an economic/feasible investment in a simple cycle generation unit. Modeling a 100 MW simple cycle generation unit, using the escalated 2009 CEC costs of generation technologies, revealed a capacity revenue requirement of $25.40/KW-year.

It is assumed that the NODOS Project will offer capacity in the CAISO market to participants that need to secure capacity resource to meet their RA obligations. For a generation asset, there are two different levels of participation (local RA, and system RA) in CAISO's capacity market, based on the relative location of that specific asset to pre-identified local congested areas within the CAISO managed grid. The NODOS Project facilities and their potential interconnection location to the CAISO grid do not currently fall in one of the congested local areas, where the generation assets can sell local RA products. Moreover, current CAISO market has sufficient system RA, with very little monetary value for assets to capture from capacity offerings. However, system RA needs, system configuration, and assets geographical distribution are changing all the time. There may be some future opportunities for the NODOS Project to participate in the RA market, as the CAISO market evolves to integrate the 33% Renewables target in 2020. Monetizing potential revenues for the NODOS Project from participation in the Capacity market is a difficult task. The uncertainty in projecting where and when RA products are needed will render any estimate worthless, at this time. So, a range of values is offered to describe potential revenues for the NODOS Project form RA offerings, and was based on a $2/ KW-year (from recent market offerings) to $25.40/KW-year (as described in #3 above).

The NODOS Project RA obligations, resulting from its pumping load, are met through the "Self-Provided" provisions of current CAISO Tariff, providing that it meets CAISO participating load requirements. In reality, the NODOS Project would meet its RA obligations in the pumping mode through a load dropping scheme, and would satisfy CAISO's RA requirements. For Alt C Pumping mode, the monetary value of meeting RA obligations, which can be described as avoided cost, has a range in NPV of $1,666,000 to $20,944,000 for the "Incidental" operations and $827,000 to $10,338,000 for the "Optimized" operations, for the Median Case deliveries and the 30-year planning period. The significant difference in the RA obligations between the

"Incidental" and the "Optimized" operations is the result of avoiding pumping during the Super Peak hours (which determines an asset's RA obligations in CAISO) in the "Optimized" pumping mode.

For the NODOS Project generation mode, the corresponding potential Capacity revenues are estimated at a NPV of $946,080 to $11,826,000 for the "Incidental" operations, and $2,572,000 to $32,149,000 for the "Optimized" operations. Optimizing the NODOS Project operations would result in a significant increase in generation assets utilization during the Super Peak hours (and enhance its RA offerings potential). The Pumpback mode for the NODOS project would be in sync with CAISO's Capacity market optimal values (Super Peak generation hours) and least obligations (Off- Peak load). The pumpback operations can add to the NODOS Project RA potential revenues in NPV between $3,040,000 and $38,000,000. It should be noted that estimates for Capacity revenues are projections that are highly dependent (and uncertain) on whether the CAISO market will evolve with the need to secure RA resources (to integrate Renewables) from assets similar to the NODOS Project or not.

7.2- Ancillary Services Potential

The CAISO procures Ancillary Services (AS) to ensure that it has adequate reserve generation capacity to maintain the electric system reliability and system frequency, by matching generation and load at all times under both normal and abnormal operating conditions. In their restructured electricity market (Post MRTU), CAISO obtains AS services through a competitive bidding process. On a daily basis, CAISO procures four primary AS services (regulation, spinning reserves, non-spinning reserves, and replacement reserves), in day-ahead and in hour-ahead markets. The two additional AS that CAISO procures are black-start and voltage support services, which are procured on a long term basis. The four primary AS are procured on separate basis, in a competitive open market environment, designed as being an integral component of the energy market. The Primary AS markets are defined by CAISO, as follow:

1-Regulation: Generation that is on-line, and synchronized with the CAISO controlled grid so that the energy can be increased or decreased instantly through automatic generation control (AGC), directly by the CAISO monitoring system. Regulation is used to maintain continuous balancing of resources and loads within the CAISO controlled grid, as well as maintains frequency during normal operating conditions.

2-Spinning Reserve: Generation that already on-line, or "spinning," with additional capacity that is capable of ramping over a specified range within 10 minutes and running for at least two hours.

3-Non-Spinning Reserve: Generation that is available but not on-line, that is capable of being synchronized and ramping to a specified level within 10 minutes, and capable of producing dispatched energy for at least two hours.

4-Replacement Reserves: Generation that is capable of starting up if not already operating, synchronized with CAISO controlled grid and ramping to a specified load within one hour, and running for at least two hours.

The two remaining AS (voltage support and black-start) are procured primarily through the Reliability Must Run (RMR) contracts. CAISO is responsible for conducting a competitive market of the four primary AS on behalf of the market participants.

For the NODOS Project pumping/generating facilities, if interconnected to CAISO grid, AS would be a significant operations and costs/revenues concern. For the NODOS Project to participate in the CAISO AS market, the CAISO Tariff requires a participating generator to undergo a certification process- the process details are beyond the scope of this Study. CAISO Tariff states that a participating generator is a generator or other seller of energy or AS through a Scheduling Coordinator over the CAISO grid from a generating unit with a rated capacity of one MW or greater, or from a generating unit providing AS and/or Imbalance Energy through an aggregation arrangement approved by the CAISO- a criteria that the NODOS Project will clearly meet. The CAISO accepts market bids for energy and AS only from Scheduling Coordinators on behalf of the participating generator.

A preliminary assessment for AS opportunities for the NODOS Project is conducted using the Median Case CALSIM II deliveries, for the 30-year planning period. Although the opportunity exists for the Project's facilities to participate in providing AS in the CAISO day- ahead and hour- ahead markets, the current analysis focuses on the day-ahead market opportunities. More thorough analysis will be conducted in the next phase of the study as the NODOS Project evolves into an advanced stage, and more granular details are developed through improved modeling efforts (daily, and hourly time steps) for project operations. In general, participation in the AS market is an opportunity to translate inherent operational flexibilities, and excess capacities into revenue opportunities. For the NODOS Project, the ultimate priority is to maintain the intended seasonal water cycle diversions/deliveries that the Project was designed to capture. Therefore, revenue opportunities from participation in the AS market will have to be designed as an incidental activity to satisfying the intended project's operations. More operational scenarios will be considered in the next phase of the Study, where operations would be optimized to capture the most revenues the market offers for both energy and Ancillary Services, coincidently.

The restructured CAISO market (post MRTU) is still evolving, and price signals have not necessarily matured, to reflect long term market trends for AS prices. Moreover, CAISO's renewable integration initiative and market redesign will have great impact on AS needs and prices. New CAISO AS products (such as fast ramping) may provide an exceptional opportunity for hydro installation, such as the NODOS Project, to capture and participate in. For the current Study, the best available approach to value the NODOS Project potential revenues from AS markets, is to use recent historical AS clearing prices for the CAISO market as a reference- available on CAISO's OASIS web site.

For the pumping cycle, the NODOS Project will have the opportunity, as a participating load (meeting CAISO Tariff definition), to sell Non Spin AS (as described in #3 above) into the CAISO market. However, the AS participation will be limited to the Sites Reservoir pumping plant, so that water diversions from the Sacramento River could be maintained, at all times. The assumption is that when the pump load at Sites Reservoir pumping plant gets dropped by CAISO, water diversions from the Sacramento River could be stored in Holthouse Reservoir for the period of time CAISO needs the service- currently, a two hours maximum period for a Non Spin AS. Stored water at Holthouse Reservoir could then be pumped into Sites Reservoir at a later time within the same day. Current CALSIM II runs indicate that in months with potentially

highest water diversions from the Sacramento River, it is possible to use excess pumping capacity at Sites Reservoir to accommodate the Non Spin AS participation. More detailed analysis is needed for the pumping cycle in the next phase of the Study to develop AS participation strategies. Figure 19 depicts the Non Spin AS potential in MWh, for Sites Reservoir pumping plant, for Alternative C.

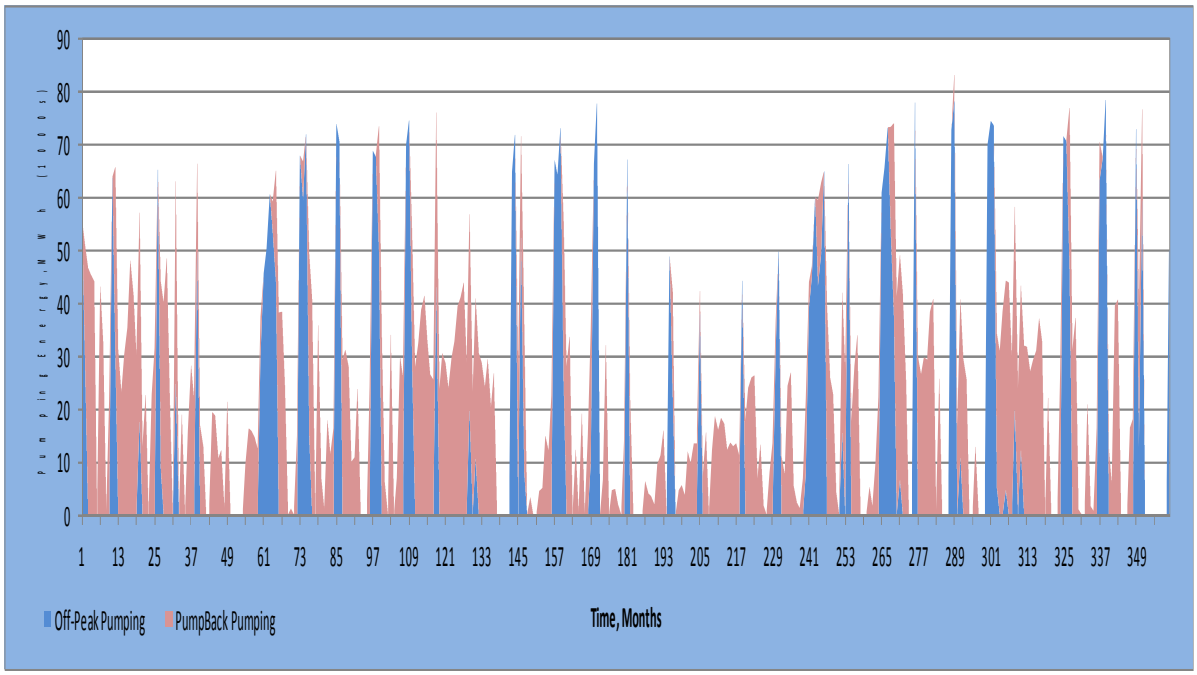

Figure 19- Ancillary Service Potential, Sites Reservoir Pumping Cycle, Median Case

For the generation cycle, the NODOS Project will have the opportunity to sell Regulation Down AS (as described in #1 above) in the CAISO market. The NODOS Project water Release mode was optimized (in this Study) to capture the most value for its incidental generation, that the market offers. Hence, water releases from Sites Reservoir are designed to occur in the On-Peak (or Super Peak) hours. Accordingly, the Project generation facilities are assumed to sell Regulation Down AS, mostly in the On-Peak (and Super Peak) hours and to a lesser extent in the Off-Peak hours. The assumption is that Regulation Down AS for the NODOS Project, if called upon, represents a temporary delay in water releases, and could be rectified within few hours. Also, it is assumed that the NODOS Project facilities will be equipped with Automatic Generation Control (AGC) system and that the generation units would be of the type that could quickly be ramped down to satisfy CAISO requirements for this type of AS support. Participating in the Regulation Down AS market may result in foregoing some of the On-Peak generation revenues. More detailed analysis will be conducted in the next phase of the Study to estimate the value of lost opportunity resulting from shifting generation needed by AS dispatch. The AS participation impact on the NODOS Project revenues need to be done in the context of the frequency at which CAISO calls upon this type of AS support. Figure 20 depicts the Regulation Down AS potential for the NODOS Project generation facilities in MWh, for Alternative C.

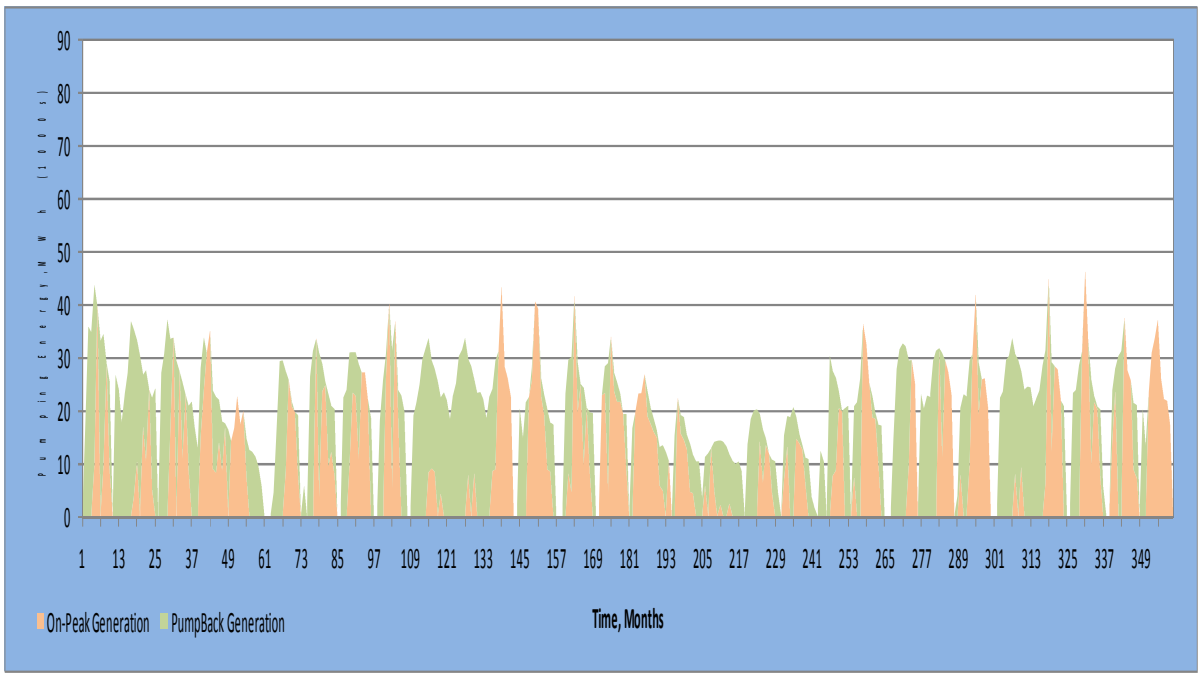

Figure 20- Ancillary Service Potential, NODOS Project Generation Cycle, Median Case

The average values for the Off-Peak Non-Spin, and On-Peak Regulation Down are calculated using published clearing prices for the CAISO AS markets. For the NODOS Project, the total AS revenues from Non Spin (the pump mode) for the 30-year planning period in NPV is $4,925,000. The corresponding total AS revenues from Regulation Down (in the generation mode) for the Project in NPV is $9,198,000. The total AS revenues from the pumpback operations in NPV is $11,595,000. The NODOS Project total potential AS revenues in NPV is $25,718,000 for the 30-year planning period. It should be noted that the aforementioned AS revenues are only a measure of potential revenues based on current market trends- granted that the CAISO market will evolve overtime to accommodate load growth, renewable integration, regulatory changes, etc.

7.3- Renewable Integration

The California Renewable Energy Resources Act (CRERA), signed by California Governor Brown on April 12th, 2011, significantly increased the State's renewable portfolio standard (RPS) targets from 20% to 33% by 2020. CRERA also expanded the compliance obligations to include virtually all retail sales of electricity in California. In September 2010, CAISO undertook a multi phase stakeholder process (Renewable Integration Market and Product Review Initiative (RIMPR)), aimed at identifying changes to the energy market structure and at introducing new market products to reliably mitigate the impact of Renewable generation (Intermittent generation) as it penetrates the market. Recently the CAISO has refocused its RIMPR from an expansive market design changes to a more incremental phased approach. CAISO is focused on developing a high level roadmap addressing short, medium, and long term market enhancement to meet renewable integration needs.

Other game changers in the power sector are energy storage technologies- among which and a very promising technology is pump-storage hydroelectric facilities. The conventional role for energy storage facilities is storing Off-Peak energy for use during the On-Peak periods or to provide Ancillary services. New role for energy storage includes making intermittent renewable energy facilities into dispatchable resources and enhancing grid reliability and power quality. Other forces driving the need for energy storage technologies are climate change policies, smart grid initiatives, and the desire to improve utilization of generation and transmission capacities.

For the NODOS Project, there is great potential for the project's generation and pumping assets to participate in providing renewable integration services as the market needs evolve. Hydropower assets have a unique feature that is not available from other energy storage technologies- fast ramping that can simultaneously provides both high capacity and energy. Although, the NODOS Project potential in renewable energy integration is certain, it is difficult to monetize that potential at this time because of the absence of a clear tradable market for these services. CAISO RIMPR may introduce new market products that the NODOS Project can provide, yet sustain its primary water storage and delivery objectives.

The inherent nature of excess capacity for hydropower installations resulting from hydrology swings, provide the opportunity to participate in providing energy storage services and the need to better utilize the excess capacity of project's assets (to enhance project economics). The NODOS Project multi-purpose objectives will further enhance its chances in competing in the market as an energy storage asset (as project costs are socialized among multiple objectives) relative to more costly technologies. The limiting factors for the NODOS Project participation are the inherent priorities of meeting the water delivery obligations over market driven power operations of the project's assets.

8- Recommendations and Next Steps

The current phase of the Power Planning Study of the NODOS Project is meant to provide a feasibility level assessment of the designed Project components, and operational scenarios, from a power planning perspective. Three action alternatives, each with different configuration and components capacities are considered and analyzed. Power planning perspective is important in capturing the impacts of the energy market economies and regulatory mandates and will be consequential to the costs and revenues- for the NODOS Project to be adopted and built. Although, the NODOS Project is envisioned to provide off-stream storage needed to support the State Water Project and the Central Valley Project operations and functions, its Power Portfolio is a major component in determining the Project's ultimate viability. More work is needed to improve on the findings of the current phase of the study,

- Use anticipated CALSIM II modeling results (reflecting latest B.O.) for the daily operations to refine the optimization of the NODOS Project operations.
- Use available market information (i.e. LMP prices and trends) to optimize the NODOS Project operations. Update the AS duration curves to reflect CAISO locational markets, and potential future markets resulting from the need to integrate Renewables.
- Integrate CAISO's RIMPR changes to the energy market in optimizing and valuing the NODOS Project Power Portfolio.

- Explore and propose modifications to the physical and operational attributes of the power generation complex in light of the modeling results. Consider the change in designed capacities needed to correspond to the optimized operations, and needed Project flexibilities.
- Identify operational scenarios and design modifications that could be modeled to optimize Project's operations and to enhance its value.
- Consider scenarios reflecting climate change impacts on the NODOS Project operations, design needs, and ultimate viability.
- Propose a sensitivity analysis process that would describe the impact of adjusting design parameters, operational and financial uncertainty, on the Project's value.
- Look into trends in technologies and setups that represent current practice in designing hydropower Projects. Many recently designed pump-storage facilities are using separate pumping and generating facilities to increase efficiency and add operational flexibility.
- Consider a 50-year planning period that is more consistent with the life cycle of hydropower Project components.

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Appendix A- Transmission Interconnection Roadmap

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Transmission Interconnection Process

PARO's Transmission Planning Branch Prepared a description of the normal process that DWR has taken when exploring transmission interconnection options for new or existing facilities. The discussion below should serve as a roadmap for the transmission interconnection process for the NODOS Project.

Preliminary Details

Before the Power and Risk Office (PARO) can initiate its actions for obtaining physical interconnection and transmission service for DWR facilities, the following need to be ascertained:

1. Estimated peak capacity needs (MWs) at facilities' start-up and during construction
2. Planned load growth for future enlargements at said facilities
3. Probable location of "Point of Interconnection" to high-voltage system
4. Identification of all potential transmission providers

Transmission Provider Studies

All of the major transmission service providers in California require that they conduct various engineering studies which evaluate the impact of a proposed facility on the overall high-voltage system. These studies, usually known as "System Impact Studies (SIS)," are of value to DWR for two reasons. First, the reports resulting from these studies can be utilized in any EIR/EIS documentation for discussion of transmission impacts (i.e., line routing and substations). Second, the studies, a necessary first level of review required by any of the potential transmission service providers, give a good indication of which provider represents the preferred option. However, it must be noted that any cost estimates provided at the SIS stage are considered preliminary and non-binding.

Once DWR has reviewed the various SIS reports and validated their findings, DWR must initiate the second stage of the transmission planning studies (typically called a Facility Study). These studies build upon the SIS and identify specific hardware that will be needed to implement the transmission service interconnection. Typically, one can assume that the Facility Study will provide accurate cost estimates that could be used in determining the economics of the project.

Transmission Service Request

Once the results of the various studies (i.e., SIS and Facility Study) are compiled, DWR can now determine which provider it will seek an interconnection with, and subsequent transmission service. Typically, DWR will need to arrange for an interconnection service agreement and a transmission service agreement.

Route & Construction

Once DWR completes the transmission interconnection agreements, actual construction-related activities begin. These activities include: ordering & receiving equipment, land acquisition and permitting, and actual construction.

It is important to note that there must be adequate lead time for all of the activities described above before the new DWR facility is expected to be on-line. To illustrate this, Table A-1 represents a typical timeline.

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TABLE A-1 – A TYPICAL TIMELINE FOR NEW TRANSMISSION INTERCONNECTION

Phase	Action	PARO's Role	Duration
Preliminary Details			
	Assessing Project Needs (e.g., location and loads)	Support DWR's project team where necessary	(unknown, but for purposes of this timeline, completion of Preliminary Details is T_0)
Transmission Provider Studies			
	Coordination with Transmission Providers	Prepare necessary letters and documentation. Facilitate groundwork discussions between DWR and Providers	2 months
	Formal Studies (System Impact Studies & Facility Studies)	Prepare necessary documentation. Negotiate study agreements. Facilitate payments for studies. Monitor process. Assist DOE-Electrical Engineering in reviewing results. Submit recommendations to Management for which transmission option is preferable.	Up to 2 years
Transmission Service Requests			
	Formal Request to Preferred Transmission Provider	Prepare necessary documentation for request. Negotiate transmission interconnection agreement. Negotiate transmission service agreement. Facilitate upfront payments as required by agreements.	1 year
Construction Phase			
	DWR to order required hardware for its side of interconnection and for Provider to order hardware for their side.	Assist DWR project team and DOE-Electrical Engineering as necessary	3 years
	Install DWR's hardware & Provider installs on their side of interconnection, per agreements	Assist DWR project team and DOE-Electrical Engineering as necessary	2 years
On-line Date **** Assuming no major obstacles to Timeline ****			8 years after Preliminary project Details complete

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Appendix B- NODOS Project Power Operations, Modeling Results

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt A (Incidental Operations) Deliveries Cas

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total	Period Total, NPV ($1000)							
TC Canal Pumping	-6,080	-285	-115	-276	-321	-105	-180	-152	-188
GCID Pumping	-10,085	-319	-268	-383	-433	-357	-350	-387	-341
Sac River Pumping	-53,500	-2,821	-2,867	-1,926	-1,689	-667	-1,109	-2,531	-1,383
TRR Pumping	-9,937	-530	-85	-204	-1,254	-190	-81	-552	-597
Sites Pumping	-149,355	-8,238	-3,209	-5,500	-10,489	-848	-4,019	-4,825	-5,680
Subtotal	-228,957	-12,193	-6,544	-8,289	-14,186	-2,167	-5,739	-8,447	-8,189
NODOS Generation	Period Total	Period Total, NPV ($1000)							
Sites Geneneration	109,079	3,825	3,961	4,215	4,083	3,420	5,604	2,330	7,173
TRR Generation	19,649	528	1,333	510	969	544	777	761	1,223
Sac River Genenration	49,875	2,395	2,591	2,465	1,448	1,662	2,706	1,821	3,621
Subtotal	178,603	6,748	7,885	7,190	6,500	5,626	9,087	4,912	12,017
PumpBack Operations	Period Total	Period Total, NPV ($1000)							
PumpBack during Diversion cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumpBack During Release Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pure PumpBack Operations Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NODOS Project Total	-50,354	-5,445	1,341	-1,099	-7,686	3,459	3,348	-3,535	3,828

Notes

Cash Flow reported pre-tax in PV($000).

Evaluation performed 07/07/2011

Report updated at 10:28:53 AM.

Table B1- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt A

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt A (Incidental Operations) Deliveries Case (Cont.)

9	10	11	12	13	14	15	16	17	18	19
-303	-262	-123	-413	-214	-249	-180	-352	-197	-276	-232
-463	-329	-364	-391	-340	-343	-299	-446	-360	-382	-357
-2,682	-1,584	-999	-2,887	-2,268	-2,768	-1,223	-3,367	-1,146	-1,509	-816
-880	-154	-83	-477	-187	-191	-92	-572	-391	-297	-341
-8,511	-4,654	-2,829	-10,341	-4,830	-6,085	-4,499	-9,575	-4,863	-6,585	-5,663
-12,839	-6,983	-4,398	-14,509	-7,839	-9,636	-6,293	-14,312	-6,957	-9,049	-7,409
3,016	4,255	5,263	5,063	4,476	3,517	4,900	4,016	5,829	4,217	3,911
448	793	757	673	1,071	679	1,019	326	708	539	618
1,478	2,033	2,996	2,191	1,879	1,508	1,645	2,011	2,255	1,494	1,424
4,942	7,081	9,016	7,927	7,426	5,704	7,564	6,353	8,792	6,250	5,953
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-7,897	98	4,618	-6,582	-413	-3,932	1,271	-7,959	1,835	-2,799	-1,456

Table B1- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt A (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt A (Incidental Operations) Deliveries Case (Cont.)

20	21	22	23	24	25	26	27	28	29	30
-248	-118	-158	-71	-61	-266	-159	-168	-240	-83	-85
-342	-356	-313	-306	-182	-332	-242	-252	-272	-300	-276
-2,973	-261	-1,142	-558	-1,338	-3,348	-2,035	-1,064	-3,502	-529	-508
-401	-197	-255	-13	-145	-735	-137	-121	-350	-259	-166
-6,740	-679	-3,443	-1,224	-1,016	-7,681	-4,392	-3,731	-7,159	-1,220	-827
-10,704	**-1,611**	**-5,311**	**-2,172**	**-2,742**	**-12,362**	**-6,965**	**-5,336**	**-11,523**	**-2,391**	**-1,862**
2,877	2,299	3,610	3,646	1,110	3,319	2,661	3,755	1,689	570	469
661	313	672	524	839	502	703	565	449	60	85
997	930	951	2,158	599	1,345	875	1,120	836	265	176
4,535	**3,542**	**5,233**	**6,328**	**2,548**	**5,166**	**4,239**	**5,440**	**2,974**	**895**	**730**
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-6,169	**1,931**	**-78**	**4,156**	**-194**	**-7,196**	**-2,726**	**104**	**-8,549**	**-1,496**	**-1,132**

Table B1- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt A (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt A (Optimized Operations) Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	**Period Total**	**Period Total, NPV ($1000)**							
TC Canal Pumping	-6,080	-285	-115	-276	-321	-105	-180	-152	-188
GCID Pumping	-10,085	-319	-268	-383	-433	-357	-350	-387	-341
Sac River Pumping	-53,500	-2,821	-2,867	-1,926	-1,689	-667	-1,109	-2,531	-1,383
TRR Pumping	-9,937	-530	-85	-204	-1,254	-190	-81	-552	-597
Sites Pumping	-137,398	-7,693	-2,879	-4,892	-9,329	-678	-3,718	-4,443	-5,301
Subtotal	**-217,000**	**-11,648**	**-6,214**	**-7,681**	**-13,026**	**-1,997**	**-5,438**	**-8,065**	**-7,810**
NODOS Generation	**Period Total**	**Period Total, NPV ($1000)**							
Sites Geneneration	121,405	4,764	4,397	4,861	4,493	3,786	6,027	2,731	7,921
TRR Generation	20,396	580	1,377	546	982	605	803	769	1,237
Sac River Genenration	49,875	2,395	2,591	2,465	1,448	1,662	2,706	1,821	3,621
Subtotal	**191,676**	**7,739**	**8,365**	**7,872**	**6,923**	**6,053**	**9,536**	**5,321**	**12,779**
PumpBack Operations	**Period Total**	**Period Total, NPV ($1000)**							
PumpBack during Diversion cycle	7,031	101	0	0	366	384	152	0	368
PumpBack During Release Cycle	22,998	1,176	984	578	617	557	926	1,150	204
Pure PumpBack Operations Cycle	17,435	152	1,083	1,100	274	1,359	117	876	0
Subtotal	**47,464**	1,429	2,067	1,678	1,257	2,300	1,195	2,026	572
NODOS Project Total	**22,140**	**-2,480**	**4,218**	**1,869**	**-4,846**	**6,356**	**5,293**	**-718**	**5,541**

Notes

Cash Flow reported pre-tax in PV($000).

Evaluation performed 07/07/2011

Report updated at 10:28:53 AM.

Table B2- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt A

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt A (Optimized Operations) Deliveries Case (Cont.)

9	10	11	12	13	14	15	16	17	18	19
-303	-262	-123	-413	-214	-249	-180	-352	-197	-276	-232
-463	-329	-364	-391	-340	-343	-299	-446	-360	-382	-357
-2,682	-1,584	-999	-2,887	-2,268	-2,768	-1,223	-3,367	-1,146	-1,509	-816
-880	-154	-83	-477	-187	-191	-92	-572	-391	-297	-341
-7,979	-4,007	-2,701	-9,343	-4,431	-5,506	-4,200	-8,921	-4,680	-6,060	-5,222
-12,307	**-6,336**	**-4,270**	**-13,511**	**-7,440**	**-9,057**	**-5,994**	**-13,658**	**-6,774**	**-8,524**	**-6,968**
3,294	4,652	5,941	5,441	4,921	4,065	5,416	4,667	6,450	4,763	4,030
466	825	788	672	1,094	728	1,060	354	735	528	638
1,478	2,033	2,996	2,191	1,879	1,508	1,645	2,011	2,255	1,494	1,424
5,238	**7,510**	**9,725**	**8,304**	**7,894**	**6,301**	**8,121**	**7,032**	**9,440**	**6,785**	**6,092**
171	380	121	722	93	181	120	186	166	554	299
837	906	590	662	1,020	846	691	751	371	839	821
497	623	264	0	512	874	518	452	481	178	547
1,505	1,909	975	1,384	1,625	1,901	1,329	1,389	1,018	1,571	1,667
-5,564	**3,083**	**6,430**	**-3,823**	**2,079**	**-855**	**3,456**	**-5,237**	**3,684**	**-168**	**791**

Table B2- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt A (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt A (Optimized Operations) Deliveries Case (Cont.)

20	21	22	23	24	25	26	27	28	29	30
-248	-118	-158	-71	-61	-266	-159	-168	-240	-83	-85
-342	-356	-313	-306	-182	-332	-242	-252	-272	-300	-276
-2,973	-261	-1,142	-558	-1,338	-3,348	-2,035	-1,064	-3,502	-529	-508
-401	-197	-255	-13	-145	-735	-137	-121	-350	-259	-166
-6,354	-543	-3,073	-1,125	-986	-7,247	-4,139	-3,517	-6,784	-1,018	-629
-10,318	**-1,475**	**-4,941**	**-2,073**	**-2,712**	**-11,928**	**-6,712**	**-5,122**	**-11,148**	**-2,189**	**-1,664**
3,189	2,557	4,147	4,121	1,007	3,544	2,859	4,275	1,911	661	514
695	345	714	540	865	525	731	593	466	52	83
997	930	951	2,158	599	1,345	875	1,120	836	265	176
4,881	**3,832**	**5,812**	**6,819**	**2,471**	**5,414**	**4,465**	**5,988**	**3,213**	**978**	**773**
170	397	471	142	58	148	212	83	149	384	453
1,090	1,066	705	908	328	861	1,031	673	639	609	562
476	957	335	287	964	233	291	293	746	1,474	1,472
1,736	2,420	1,511	1,337	1,350	1,242	1,534	1,049	1,534	2,467	2,487
-3,701	**4,777**	**2,382**	**6,083**	**1,109**	**-5,272**	**-713**	**1,915**	**-6,401**	**1,256**	**1,596**

Table B2- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt A (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt B (Incidental Operations)Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total	Period Total, NPV ($1000)							
TC Canal Pumping	-7,508	-118	-154	-156	-89	-223	-179	-231	-186
GCID Pumping	-11,520	-346	-356	-341	-302	-306	-288	-429	-436
Sac River Pumping	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRR Pumping	-16,451	-69	-576	-357	-71	-45	-158	-763	-443
Sites Pumping	-147,695	-1,167	-4,894	-1,321	-1,747	-1,645	-2,469	-4,482	-4,074
Subtotal	-183,174	-1,700	-5,980	-2,175	-2,209	-2,219	-3,094	-5,905	-5,139
NODOS Generation	Period Total	Period Total, NPV ($1000)							
Sites Geneneration	111,264	4,644	5,875	117	2,159	696	2,165	3,841	1,508
TRR Generation	6,840	1	824	0	0	43	0	429	3
Sac River Genenration	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	118,104	4,645	6,699	117	2,159	739	2,165	4,270	1,511
PumpBack Operations	Period Total	Period Total, NPV ($1000)							
PumpBack during Diversion cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumpBack During Release Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pure PumpBack Operations Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NODOS Project Total	-65,070	2,945	719	-2,058	-50	-1,480	-929	-1,635	-3,628

Notes

Cash Flow reported pre-tax in PV($000).

Evaluation performed 07/07/2011

Report updated at 10:28:53 AM.

Table B3- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt B

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt B (Incidental Operations)Deliveries Case (Cont.)

9	10	11	12	13	14	15	16	17	18	19
-342	-367	-117	-438	-538	-395	-230	-164	-271	-197	-227
-524	-478	-436	-529	-541	-386	-305	-412	-405	-406	-413
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-1,067	-977	0	-1,260	-1,841	-696	-164	-194	-503	-141	-316
-6,558	-8,746	0	-7,909	-13,152	-8,759	-4,990	-3,798	-3,854	-3,220	-3,142
-8,491	-10,568	-553	-10,136	-16,072	-10,236	-5,689	-4,568	-5,033	-3,964	-4,098
1,152	5,084	6,489	3,551	4,164	5,899	8,109	4,598	3,151	3,845	3,936
5	282	42	5	261	716	1,033	10	382	8	5
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,157	5,366	6,531	3,556	4,425	6,615	9,142	4,608	3,533	3,853	3,941
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-7,334	-5,202	5,978	-6,580	-11,647	-3,621	3,453	40	-1,500	-111	-157

Table B3- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt B (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt B (Incidental Operations)Deliveries Case (Cont.)

20	21	22	23	24	25	26	27	28	29	30
-295	-207	-270	-347	-413	-167	-291	-120	-258	-304	-214
-410	-400	-391	-403	-436	-313	-301	-312	-334	-330	-251
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-766	-295	-732	-723	-1,216	-333	-742	-64	-692	-956	-291
-6,095	-2,066	-6,661	-6,706	-10,470	-2,796	-7,128	-1,787	-6,679	-7,579	-3,801
-7,566	**-2,968**	**-8,054**	**-8,179**	**-12,535**	**-3,609**	**-8,462**	**-2,283**	**-7,963**	**-9,169**	**-4,557**
1,179	3,161	3,444	5,318	2,858	4,657	5,028	3,151	3,864	4,200	3,421
6	10	392	95	167	403	558	7	295	485	373
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,185	**3,171**	**3,836**	**5,413**	**3,025**	**5,060**	**5,586**	**3,158**	**4,159**	**4,685**	**3,794**
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-6,381	**203**	**-4,218**	**-2,766**	**-9,510**	**1,451**	**-2,876**	**875**	**-3,804**	**-4,484**	**-763**

Table B3- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt B (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt B (Optimized Operations) Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	**Period Total**	**Period Total, NPV ($1000)**							
TC Canal Pumping	**-7,508**	-118	-154	-156	-89	-223	-179	-231	-186
GCID Pumping	**-11,520**	-346	-356	-341	-302	-306	-288	-429	-436
Sac River Pumping	**0**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
TRR Pumping	**-16,451**	-69	-576	-357	-71	-45	-158	-763	-443
Sites Pumping	**-133,104**	-947	-4,203	-1,078	-1,537	-1,439	-2,190	-3,949	-3,520
Subtotal	**-168,583**	**-1,480**	**-5,289**	**-1,932**	**-1,999**	**-2,013**	**-2,815**	**-5,372**	**-4,585**
NODOS Generation	**Period Total**	**Period Total, NPV ($1000)**							
Sites Geneneration	**125,490**	5,854	6,830	0	2,625	843	2,526	4,442	1,700
TRR Generation	**7,145**	0	841	0	0	56	0	441	0
Sac River Genenration	**N/A**	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	**132,635**	**5,854**	**7,671**	**0**	**2,625**	**899**	**2,526**	**4,883**	**1,700**
PumpBack Operations	**Period Total**	**Period Total, NPV ($1000)**							
PumpBack during Diversion cycle	**13,999**	20	286	49	174	175	326	457	756
PumpBack During Release Cycle	**18,298**	1,192	546	0	672	270	376	284	666
Pure PumpBack Operations Cycle	**14,916**	362	0	1,663	435	1,072	540	83	663
Subtotal	**47,213**	1,574	832	1,712	1,281	1,517	1,242	824	2,085
NODOS Project Total	**11,265**	**5,948**	**3,214**	**-220**	**1,907**	**403**	**953**	**335**	**-800**

Notes

Cash Flow reported pre-tax in PV($000).
Evaluation performed 07/07/2011
Report updated at 10:28:53 AM.

Table B4- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt B

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt B (Optimized Operations) Deliveries Case (Cont.)

9	10	11	12	13	14	15	16	17	18	19
-342	-367	-117	-438	-538	-395	-230	-164	-271	-197	-227
-524	-478	-436	-529	-541	-386	-305	-412	-405	-406	-413
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-1,067	-977	0	-1,260	-1,841	-696	-164	-194	-503	-141	-316
-5,845	-7,775	0	-7,060	-11,879	-7,992	-4,511	-3,456	-3,406	-2,878	-2,904
-7,778	**-9,597**	**-553**	**-9,287**	**-14,799**	**-9,469**	**-5,210**	**-4,226**	**-4,585**	**-3,622**	**-3,860**
1,371	5,729	7,600	4,158	4,633	6,715	8,526	5,363	3,397	4,436	4,491
0	311	39	0	270	774	1,062	1	403	0	0
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,371	**6,040**	**7,639**	**4,158**	**4,903**	**7,489**	**9,588**	**5,364**	**3,800**	**4,436**	**4,491**
244	772	0	335	967	549	587	510	141	352	199
1,105	931	270	678	760	717	282	864	664	1,126	563
841	180	494	189	0	581	733	354	1,206	290	479
2,190	1,883	764	1,202	1,727	1,847	1,602	1,728	2,011	1,768	1,241
-4,217	**-1,674**	**7,850**	**-3,927**	**-8,169**	**-133**	**5,980**	**2,866**	**1,226**	**2,582**	**1,872**

Table B4- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt B (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt B (Optimized Operations) Deliveries Case (Cont.)

20	21	22	23	24	25	26	27	28	29	30
-295	-207	-270	-347	-413	-167	-291	-120	-258	-304	-214
-410	-400	-391	-403	-436	-313	-301	-312	-334	-330	-251
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-766	-295	-732	-723	-1,216	-333	-742	-64	-692	-956	-291
-5,415	-1,854	-6,117	-6,206	-9,717	-2,434	-6,617	-1,663	-6,112	-6,957	-3,443
-6,886	**-2,756**	**-7,510**	**-7,679**	**-11,782**	**-3,247**	**-7,951**	**-2,159**	**-7,396**	**-8,547**	**-4,199**
1,372	3,690	3,635	5,951	3,120	5,035	5,321	3,539	4,283	4,557	3,748
0	1	413	100	179	427	599	0	330	498	400
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1,372	**3,691**	**4,048**	**6,051**	**3,299**	**5,462**	**5,920**	**3,539**	**4,613**	**5,055**	**4,148**
685	267	420	767	1,251	1,066	415	323	694	540	672
1,015	832	534	381	502	328	376	894	519	399	552
512	783	656	0	371	344	437	548	345	174	581
2,212	1,882	1,610	1,148	2,124	1,738	1,228	1,765	1,558	1,113	1,805
-3,302	**2,817**	**-1,852**	**-480**	**-6,359**	**3,953**	**-803**	**3,145**	**-1,225**	**-2,379**	**1,754**

Table B4- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt B (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt C (Incidental Operations) Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	Period Total	Period Total, NPV ($1000)							
TC Canal Pumping	-5,788	-279	-128	-180	-80	-82	-411	-251	-238
GCID Pumping	-9,968	-306	-375	-347	-349	-231	-431	-355	-335
Sac River Pumping	-59,196	-3,040	-273	-1,227	-155	-370	-5,674	-2,940	-1,998
TRR Pumping	-11,839	-410	-204	-295	-28	-180	-1,057	-657	-159
Sites Pumping	-172,219	-9,319	-823	-4,546	-1,836	-1,298	-11,927	-9,489	-6,630
Subtotal	-259,010	-13,354	-1,803	-6,595	-2,448	-2,161	-19,500	-13,692	-9,360
NODOS Generation	Period Total	Period Total, NPV ($1000)							
Sites Geneneration	134,217	3,210	2,997	5,049	6,577	4,109	3,477	4,764	6,204
TRR Generation	20,385	723	438	981	765	1,128	807	1,246	963
Sac River Genenration	50,193	1,191	1,147	1,384	3,310	2,147	1,742	1,635	1,880
Subtotal	204,795	5,124	4,582	7,414	10,652	7,384	6,026	7,645	9,047
PumpBack Operations	Period Total	Period Total, NPV ($1000)							
PumpBack during Diversion cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PumpBack During Release Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Pure PumpBack Operations Cycle	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Subtotal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NODOS Project Total	-54,215	-8,230	2,779	819	8,204	5,223	-13,474	-6,047	-313

Notes

Cash Flow reported pre-tax in PV($000).
Evaluation performed 07/07/2011
Report updated at 10:28:53 AM.

Table B5- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt C

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt C (Incidental Operations) Deliveries Case (Cont.)

9	10	11	12	13	14	15	16	17	18	19
-312	-268	-126	-207	-166	-264	-164	-71	-120	-71	-93
-344	-450	-416	-385	-345	-409	-407	-343	-432	-342	-252
-3,942	-1,761	-795	-1,225	-192	-3,931	-2,180	-1,088	-812	-1,161	-2,917
-534	-484	-291	-654	-91	-860	-516	-54	-536	-13	-460
-11,595	-7,078	-1,585	-6,587	-2,531	-11,282	-7,146	-2,959	-3,105	-1,604	-2,584
-16,727	-10,041	-3,213	-9,058	-3,325	-16,746	-10,413	-4,515	-5,005	-3,191	-6,306
5,826	1,414	806	7,843	8,524	6,353	7,552	6,942	3,492	1,109	2,006
1,135	114	166	1,136	764	906	534	719	246	525	956
1,788	725	300	1,965	3,199	2,232	3,166	3,548	2,462	955	1,542
8,749	2,253	1,272	10,944	12,487	9,491	11,252	11,209	6,200	2,589	4,504
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-7,978	-7,788	-1,941	1,886	9,162	-7,255	839	6,694	1,195	-602	-1,802

Table B5- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt C (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt C (Incidental Operations) Deliveries Case (Cont.)

20	21	22	23	24	25	26	27	28	29	30
-153	-413	-149	-386	-145	-186	-195	-79	-212	-164	-195
-252	-419	-182	-460	-289	-278	-321	-251	-219	-232	-211
-2,317	-4,387	-1,716	-4,178	-1,078	-1,082	-2,570	-174	-1,728	-2,664	-1,621
-419	-899	-96	-1,227	-307	-145	-359	-11	-123	-425	-345
-3,603	-11,419	-2,922	-14,986	-3,397	-5,246	-7,031	-153	-6,238	-7,077	-6,223
-6,744	**-17,537**	**-5,065**	**-21,237**	**-5,216**	**-6,937**	**-10,476**	**-668**	**-8,520**	**-10,562**	**-8,595**
2,521	2,095	5,820	2,373	4,445	6,343	675	4,916	5,690	4,591	6,494
818	324	951	136	536	552	107	439	643	729	898
1,589	1,028	1,961	763	963	1,712	187	1,242	1,315	1,416	1,699
4,928	**3,447**	**8,732**	**3,272**	**5,944**	**8,607**	**969**	**6,597**	**7,648**	**6,736**	**9,091**
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
-1,816	**-14,090**	**3,667**	**-17,965**	**728**	**1,670**	**-9,507**	**5,929**	**-872**	**-3,826**	**496**

Table B5- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt C (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt C (Optimized Operations) Deliveries Case

Pumping-Generation Site	NPV	Year Project in Service							
		1	2	3	4	5	6	7	8
NODOS Pumping	**Period Total**	**Period Total, NPV ($1000)**							
TC Canal Pumping	-5,788	-279	-128	-180	-80	-82	-411	-251	-238
GCID Pumping	-9,968	-306	-375	-347	-349	-231	-431	-355	-335
Sac River Pumping	-59,196	-3,040	-273	-1,227	-155	-370	-5,674	-2,940	-1,998
TRR Pumping	-11,839	-410	-204	-295	-28	-180	-1,057	-657	-159
Sites Pumping	-157,842	-8,578	-627	-3,872	-1,587	-1,105	-10,846	-8,646	-5,958
Subtotal	**-244,633**	**-12,613**	**-1,607**	**-5,921**	**-2,199**	**-1,968**	**-18,419**	**-12,849**	**-8,688**
NODOS Generation	**Period Total**	**Period Total, NPV ($1000)**							
Sites Geneneration	149,578	4,268	3,456	5,915	7,547	4,251	4,017	5,702	7,137
TRR Generation	21,249	781	480	1,032	799	1,151	843	1,307	1,015
Sac River Genenration	50,193	1,191	1,147	1,384	3,310	2,147	1,742	1,635	1,880
Subtotal	**221,020**	**6,240**	**5,083**	**8,331**	**11,656**	**7,549**	**6,602**	**8,644**	**10,032**
PumpBack Operations	**Period Total**	**Period Total, NPV ($1000)**							
PumpBack during Diversion cycle	7,445	213	470	623	96	49	214	239	0
PumpBack During Release Cycle	21,566	1,717	1,412	563	824	276	401	1,371	998
Pure PumpBack Operations Cycle	17,395	323	1,571	775	278	642	1,054	0	410
Subtotal	**46,406**	2,253	3,453	1,961	1,198	967	1,669	1,610	1,408
NODOS Project Total	**22,793**	**-4,120**	**6,929**	**4,371**	**10,655**	**6,548**	**-10,148**	**-2,595**	**2,752**

Notes

Cash Flow reported pre-tax in PV($000).
Evaluation performed 07/07/2011
Report updated at 10:28:53 AM.

Table B6- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt C (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt C (Optimized Operations) Deliveries Case (Cont.)

9	10	11	12	13	14	15	16	17	18	19
-312	-268	-126	-207	-166	-264	-164	-71	-120	-71	-93
-344	-450	-416	-385	-345	-409	-407	-343	-432	-342	-252
-3,942	-1,761	-795	-1,225	-192	-3,931	-2,180	-1,088	-812	-1,161	-2,917
-534	-484	-291	-654	-91	-860	-516	-54	-536	-13	-460
-10,672	-6,153	-1,130	-6,082	-2,220	-10,507	-6,726	-2,694	-2,811	-1,345	-2,474
-15,804	**-9,116**	**-2,758**	**-8,553**	**-3,014**	**-15,971**	**-9,993**	**-4,250**	**-4,711**	**-2,932**	**-6,196**
6,177	1,648	894	8,639	9,115	7,129	8,656	7,731	3,916	1,161	2,323
1,176	124	173	1,185	795	946	556	716	248	528	974
1,788	725	300	1,965	3,199	2,232	3,166	3,548	2,462	955	1,542
9,141	**2,497**	**1,367**	**11,789**	**13,109**	**10,307**	**12,378**	**11,995**	**6,626**	**2,644**	**4,839**
160	473	681	0	333	208	186	0	131	32	0
1,140	1,322	740	383	594	1,073	655	487	619	606	645
221	1,453	2,318	598	394	0	0	0	190	803	738
1,521	3,248	3,739	981	1,321	1,281	841	487	940	1,441	1,383
-5,142	**-3,371**	**2,348**	**4,217**	**11,416**	**-4,383**	**3,226**	**8,232**	**2,855**	**1,153**	**26**

Table B6- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt C (Cont.)

Cash Flow Report for the NODOS Project, CALSIM 30-Year Planning Period, Alt C (Optimized Operations) Deliveries Case (Cont.)

20	21	22	23	24	25	26	27	28	29	30
-153	-413	-149	-386	-145	-186	-195	-79	-212	-164	-195
-252	-419	-182	-460	-289	-278	-321	-251	-219	-232	-211
-2,317	-4,387	-1,716	-4,178	-1,078	-1,082	-2,570	-174	-1,728	-2,664	-1,621
-419	-899	-96	-1,227	-307	-145	-359	-11	-123	-425	-345
-3,457	-10,359	-2,867	-13,926	-3,286	-4,787	-6,582	0	-5,916	-6,730	-5,899
-6,598	**-16,477**	**-5,010**	**-20,177**	**-5,105**	**-6,478**	**-10,027**	**-515**	**-8,198**	**-10,215**	**-8,271**
2,884	2,361	6,410	2,476	5,053	6,876	724	5,207	6,100	5,010	6,795
846	343	977	142	575	587	116	470	671	766	927
1,589	1,028	1,961	763	963	1,712	187	1,242	1,315	1,416	1,699
5,319	**3,732**	**9,348**	**3,381**	**6,591**	**9,175**	**1,027**	**6,919**	**8,086**	**7,192**	**9,421**
127	440	0	1,007	0	213	1,080	0	174	47	249
521	552	502	253	633	417	659	663	538	1,002	0
483	559	496	853	1,007	166	921	973	169	0	0
1,131	1,551	998	2,113	1,640	796	2,660	1,636	881	1,049	249
-148	**-11,194**	**5,336**	**-14,683**	**3,126**	**3,493**	**-6,340**	**8,040**	**769**	**-1,974**	**1,399**

Table B6- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt C (Cont.)

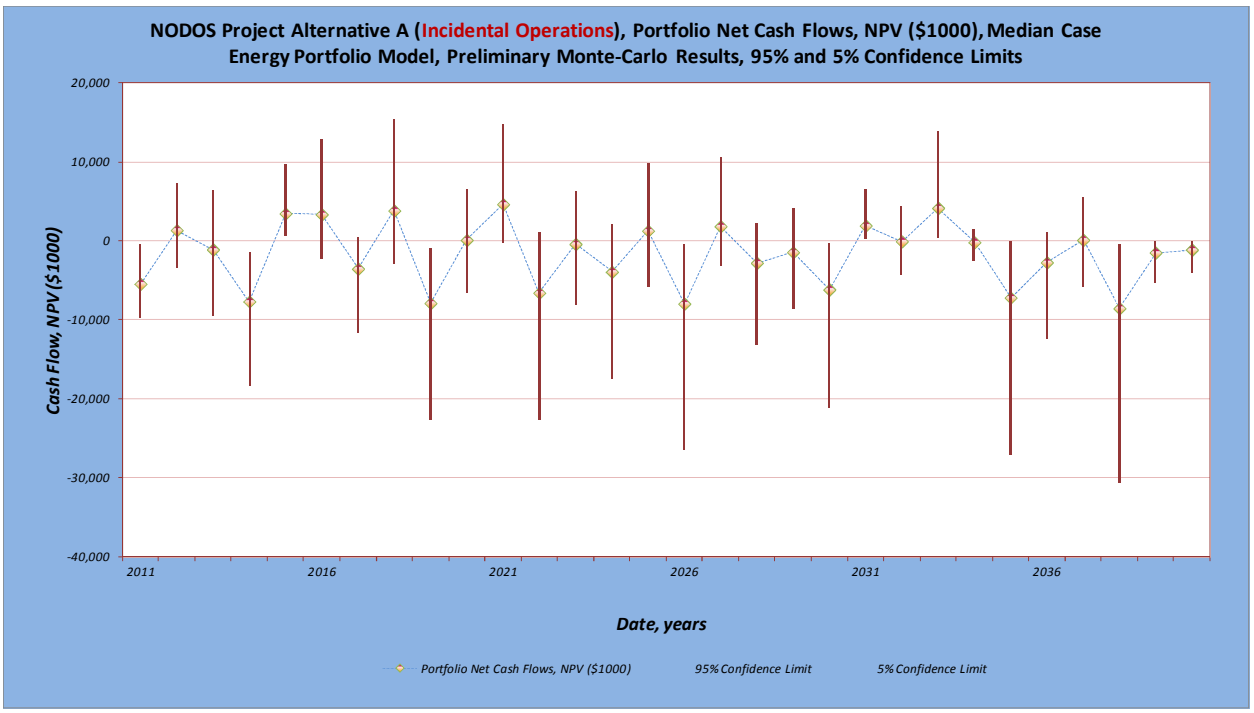

Figure B1- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt A

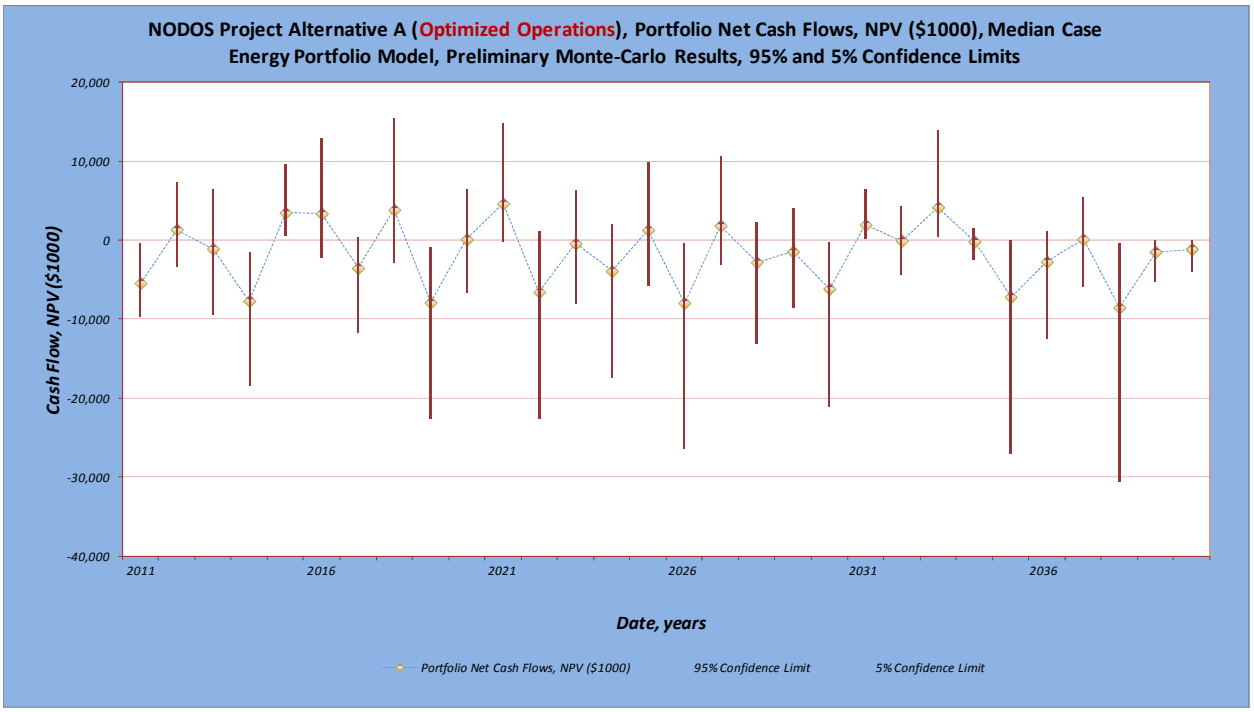

Figure B2- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt A

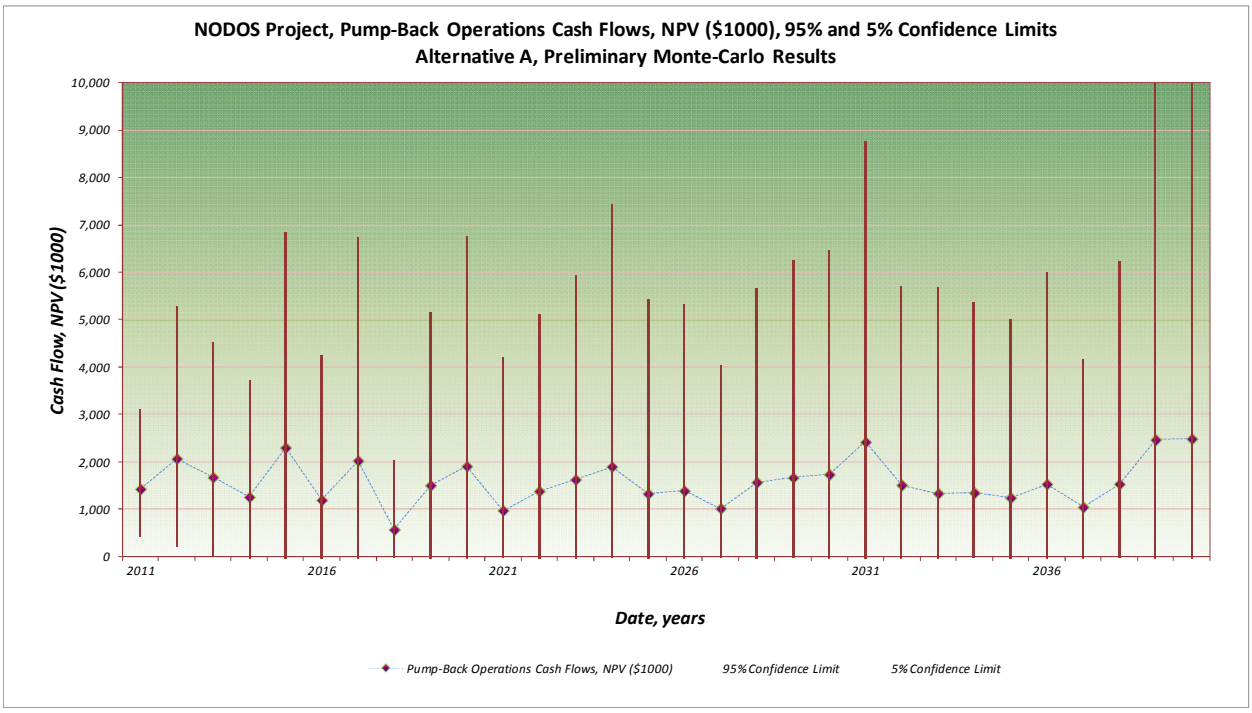

Figure B3- NODOS Project, Power Portfolio-Annual Cash Flow, "Pumpback", Alt A

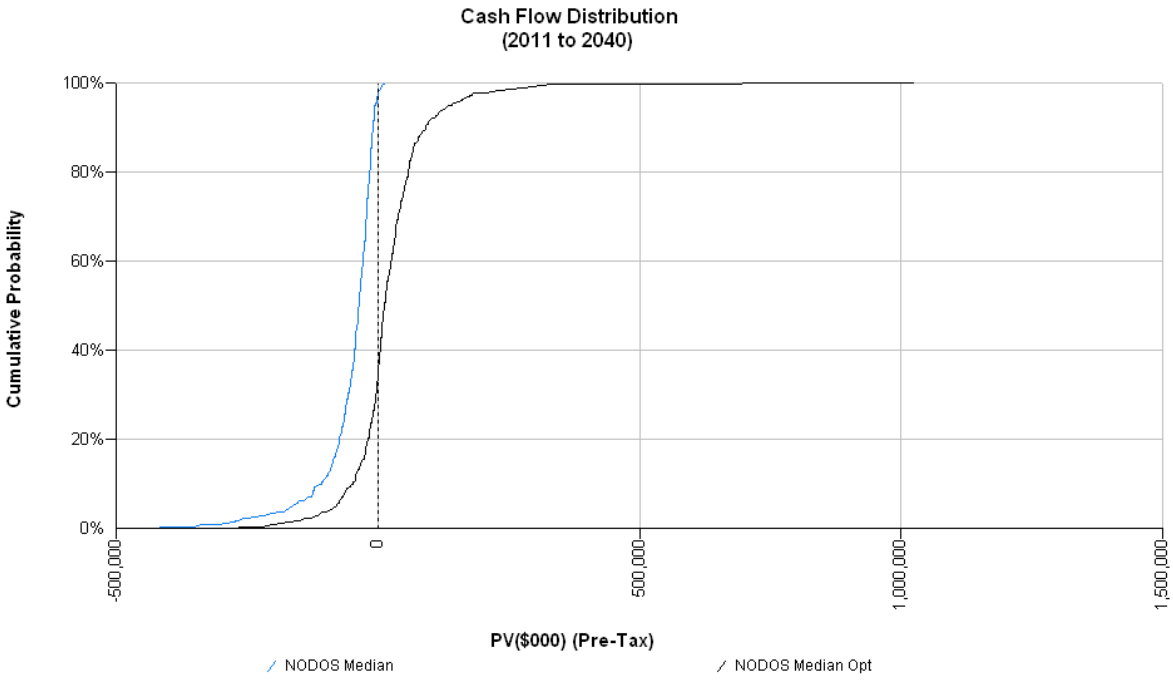

Figure B4- NODOS Project, Power Portfolio Cumulative Probability Distribution, Alt A

"Incidental" vs. "Optimized"

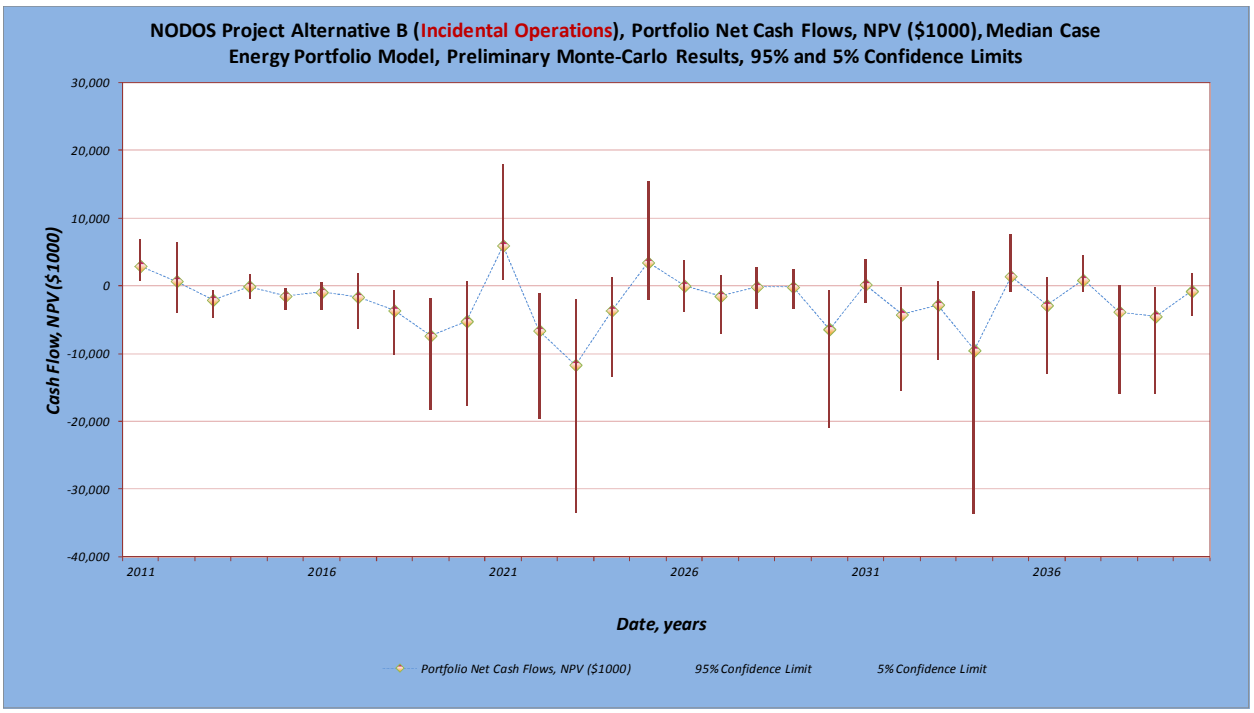

Figure B5- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt B

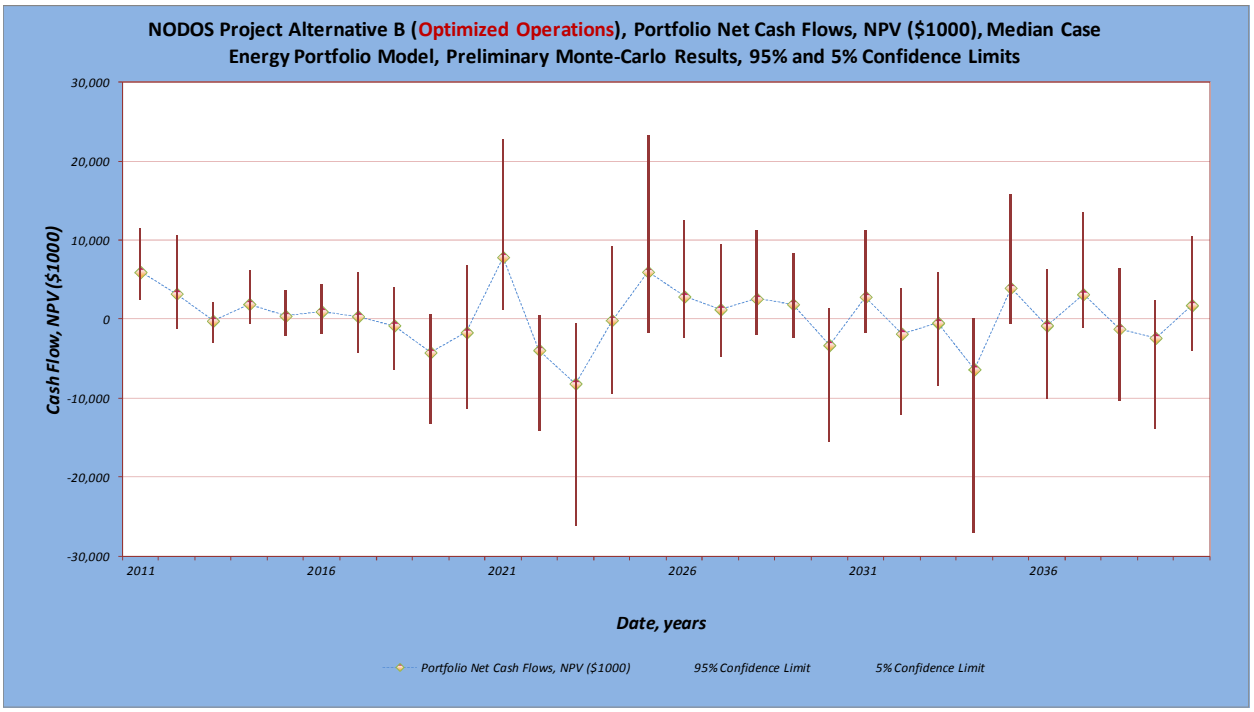

Figure B6- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt B

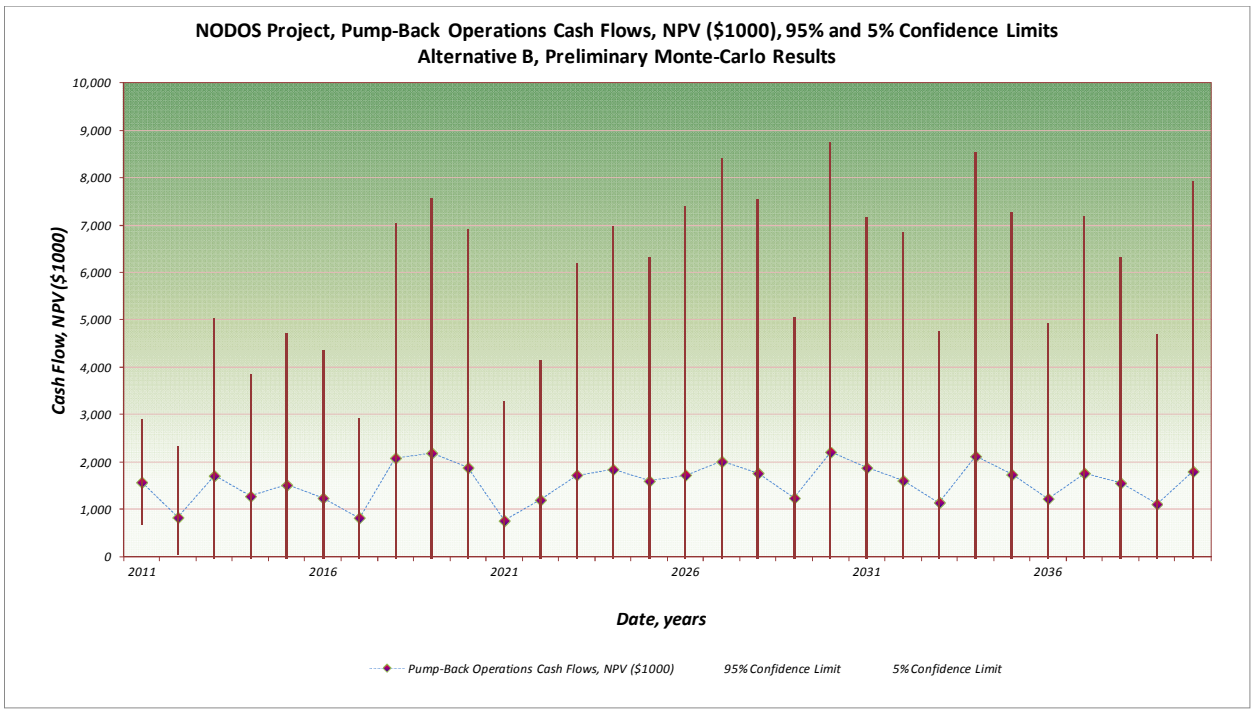

Figure B7- NODOS Project, Power Portfolio-Annual Cash Flow, "Pumpback", Alt B

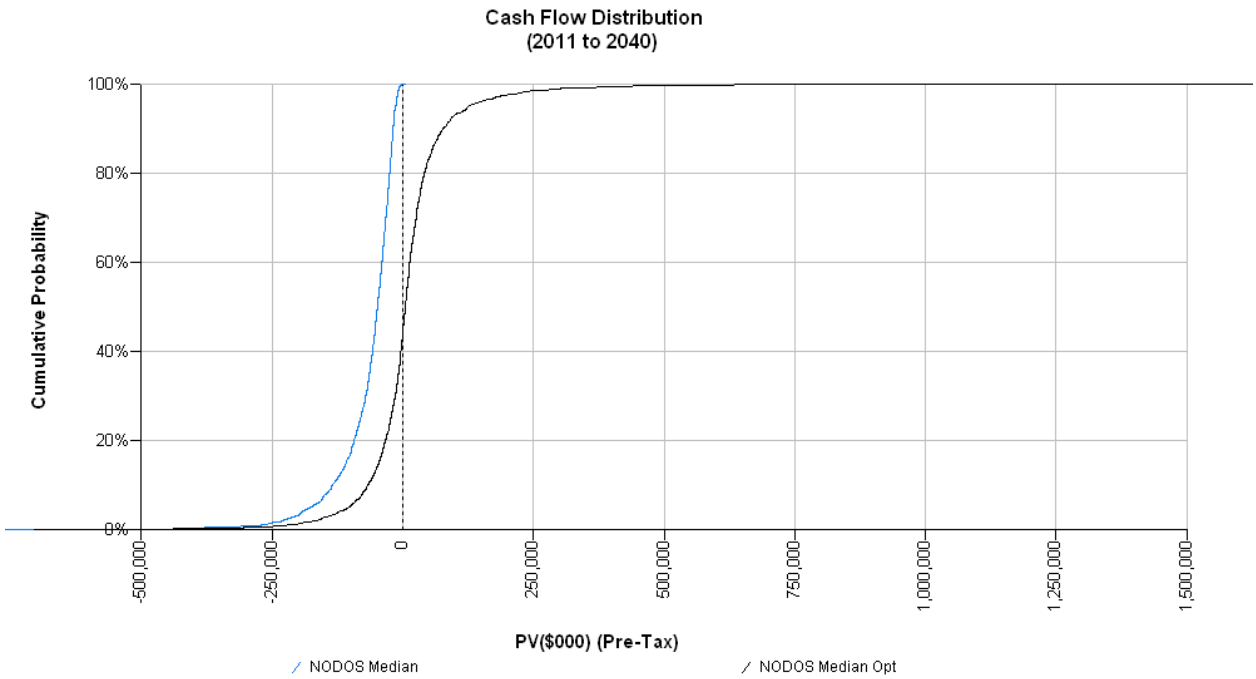

Figure B8- NODOS Project, Power Portfolio Cumulative Probability Distribution, Alt B

"Incidental" vs. "Optimized"

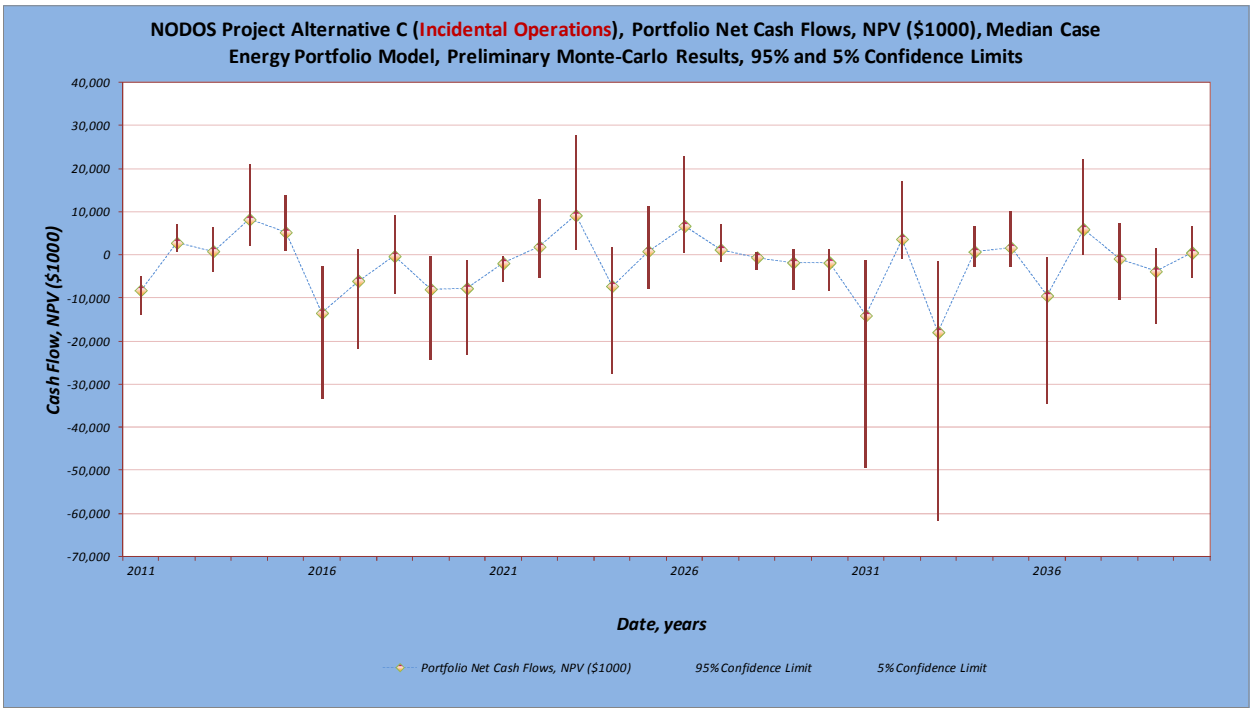

Figure B9- NODOS Project, Power Portfolio-Annual Cash Flow, "Incidental", Alt B

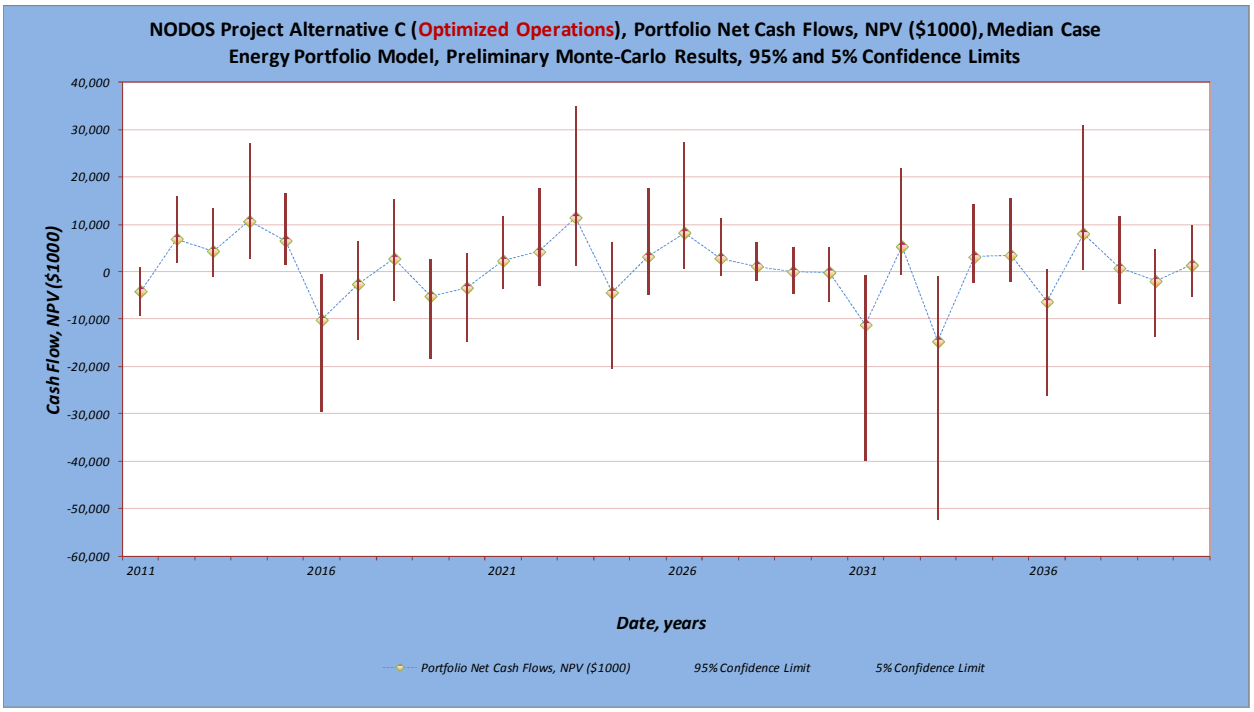

Figure B10- NODOS Project, Power Portfolio-Annual Cash Flow, "Optimized", Alt C

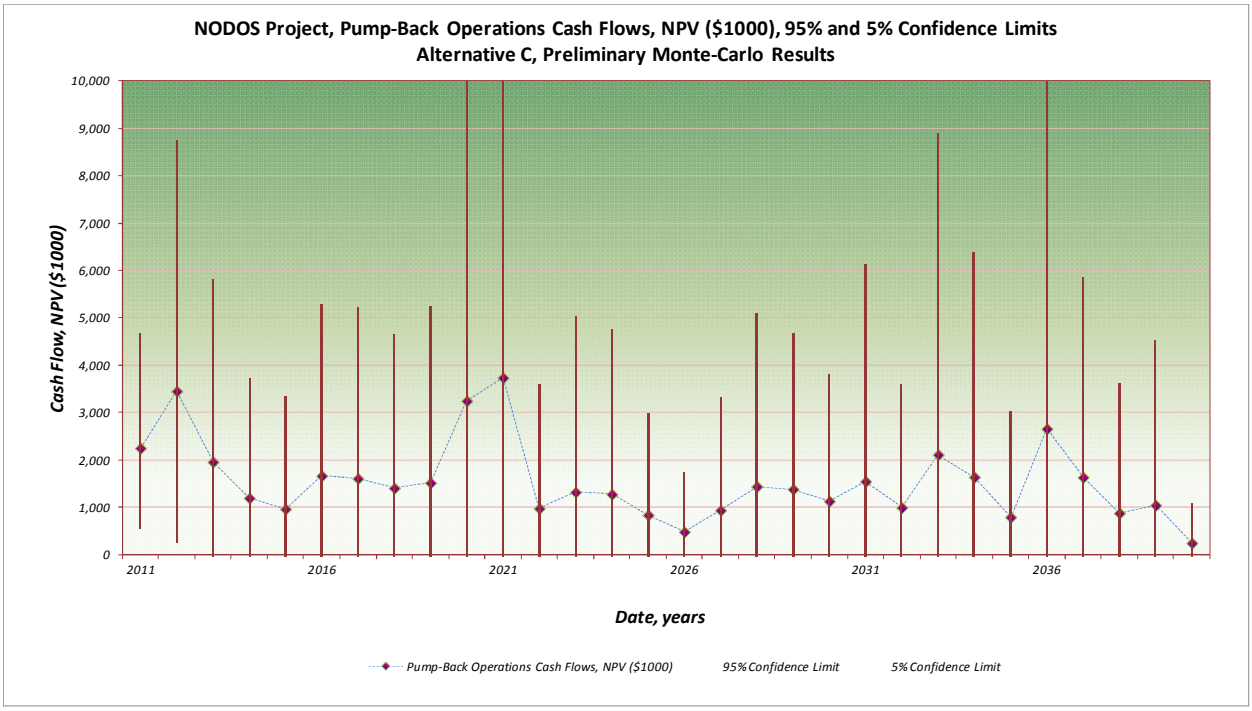

Figure B11- NODOS Project, Power Portfolio-Annual Cash Flow, "Pumpback", Alt C

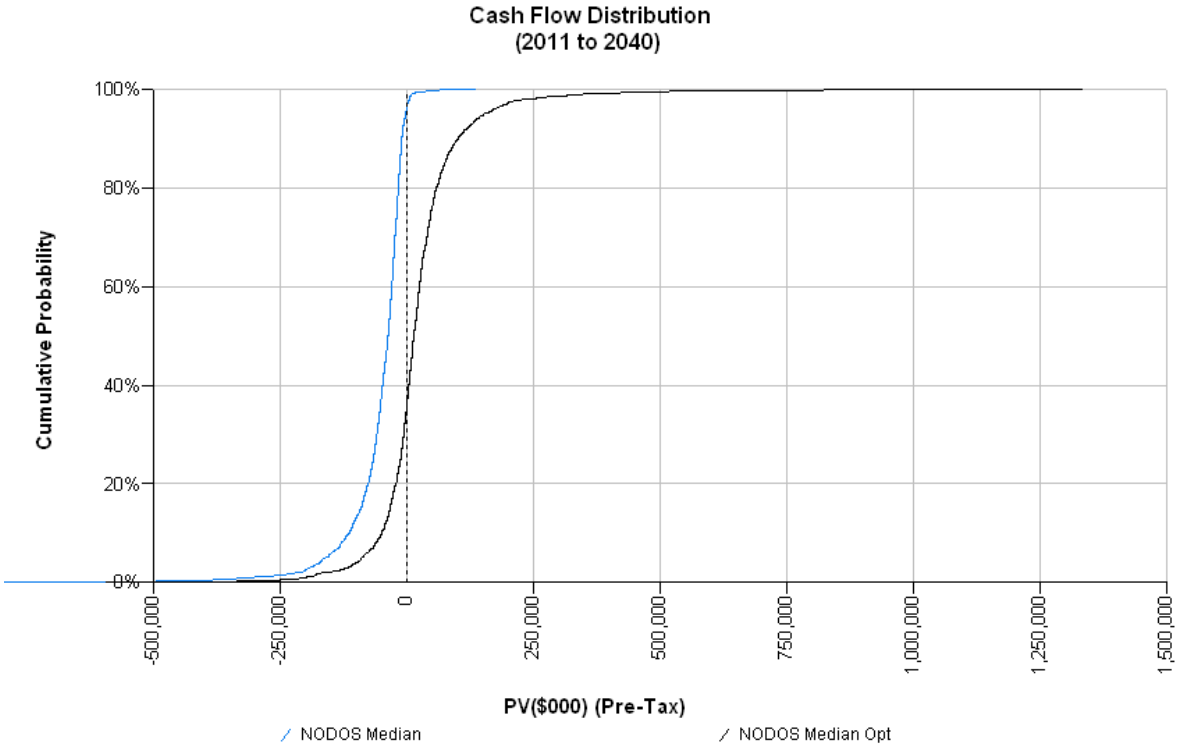

Figure B12- NODOS Project, Power Portfolio Cumulative Probability Distribution, Alt C

"Incidental" vs. "Optimized"

This document is not released as a draft EIR pursuant to CEQA Guidelines § 15087. As such, DWR is not soliciting and will not respond to comments submitted on this document, although any comments received will be retained and may be considered during preparation of a future draft EIR.

Appendix C- NODOS Project Power Operations

This document is not released as a draft EIR pursuant to CEQA Guidelines § 15087. As such, DWR is not soliciting and will not respond to comments submitted on this document, although any comments received will be retained and may be considered during preparation of a future draft EIR.

NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Incidental Pumping and Generation to Water Releases (no shaping)							
		Incidental Pumping , MW					Incidental Generation, MW		
		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Plant Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
1	744	2.28	0.37	2.73	39.11	118.75	0.00	0.00	0.00
2	672	1.46	0.06	0.00	3.13	44.87	0.00	0.00	0.00
3	744	0.03	0.09	0.00	0.00	0.11	0.05	0.00	0.00
4	720	0.49	2.11	0.00	0.00	0.63	0.37	0.00	0.00
5	744	0.45	2.12	0.00	0.00	0.00	2.52	0.40	0.40
6	720	0.59	1.66	0.00	0.53	0.00	36.39	7.38	6.41
7	744	0.65	1.55	0.00	30.75	0.18	60.89	7.30	0.00
8	744	1.10	2.03	0.00	1.01	0.00	12.45	0.60	4.96
9	720	0.09	0.35	0.00	0.00	0.00	23.79	1.52	9.10
10	744	0.08	0.69	0.00	0.00	0.00	12.94	0.16	5.11
11	720	2.44	1.55	12.30	42.85	151.73	9.86	0.00	0.00
12	744	1.39	0.19	0.00	2.52	41.50	0.02	0.00	0.00
13	744	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
14	672	0.00	0.06	0.00	0.00	0.00	9.91	0.00	0.00
15	744	0.01	0.09	0.00	0.00	0.09	2.12	0.00	0.00
16	720	0.08	1.87	0.00	0.00	0.81	26.21	0.00	0.00
17	744	0.83	2.25	0.32	0.33	1.53	1.43	0.05	0.00
18	720	0.66	2.70	0.00	8.05	0.00	0.71	1.26	0.07
19	744	1.31	2.35	0.00	0.00	0.00	3.19	1.21	3.96
20	744	1.20	2.81	6.01	2.17	23.49	49.02	0.00	0.31
21	720	0.11	0.39	0.00	0.00	0.00	21.02	1.70	5.27
22	744	0.10	0.41	0.00	0.00	0.00	13.78	2.46	2.36
23	720	0.01	0.30	0.00	0.00	0.00	6.01	1.54	9.11
24	744	0.00	0.08	0.00	0.00	0.00	0.32	0.71	2.00
25	744	0.00	0.13	0.00	2.41	5.12	0.00	0.04	0.00
26	696	2.00	0.49	3.95	29.40	108.94	0.00	0.00	0.00
27	744	0.24	0.10	0.00	2.52	11.82	0.12	0.00	0.00
28	720	0.09	1.95	0.00	0.00	0.86	0.32	0.00	0.00
29	744	0.99	2.20	0.00	0.41	0.88	0.16	0.31	0.00
30	720	0.63	1.93	0.00	7.86	0.00	1.48	5.96	0.00
31	744	0.65	1.53	0.00	0.16	0.00	24.09	7.18	2.93
32	744	1.58	2.76	5.85	2.52	33.19	12.00	0.08	1.01
33	720	0.11	0.37	0.00	0.00	0.00	34.96	1.71	9.09
34	744	0.01	0.39	0.00	0.00	0.00	34.33	2.41	2.74
35	720	0.00	0.31	0.00	0.00	0.00	28.76	1.59	9.11
36	744	0.00	0.15	0.00	0.00	0.00	6.54	1.06	3.97
37	744	0.00	0.13	0.00	0.00	0.00	0.36	0.06	0.20
38	672	0.08	0.09	0.00	0.00	0.02	0.00	0.00	0.00
39	744	2.31	0.37	1.01	5.64	66.64	0.00	0.00	0.56
40	720	0.08	2.46	0.00	0.00	0.00	0.29	0.00	8.07
41	744	0.10	2.26	0.00	0.00	0.00	0.00	0.51	9.07
42	720	0.05	1.65	0.00	0.00	0.00	14.39	7.29	8.00
43	744	0.06	1.39	0.00	0.00	0.00	58.89	7.39	9.10
44	744	0.09	1.89	0.00	0.00	0.00	35.51	0.43	5.36
45	720	0.04	0.58	0.00	0.00	0.00	9.79	0.05	5.68
46	744	0.07	0.76	0.00	0.00	0.00	0.00	0.07	8.31
47	720	0.01	0.52	0.00	0.00	0.00	8.93	0.05	6.11
48	744	0.00	0.27	0.00	0.00	0.00	0.00	0.05	9.06
49	744	0.00	0.08	0.00	0.00	0.00	0.00	0.00	1.42
50	672	0.01	0.08	0.00	0.00	0.00	0.00	0.02	9.10
51	744	0.04	0.11	0.00	0.00	0.00	0.03	0.39	9.00
52	720	0.02	1.12	0.00	0.00	0.00	0.12	7.07	9.05
53	744	0.01	0.73	0.00	0.00	0.00	0.21	5.26	7.61
54	720	0.03	1.14	0.00	0.00	0.00	1.12	7.40	9.11
55	744	0.29	1.36	0.00	0.00	0.00	11.20	4.49	2.76
56	744	0.43	1.30	0.00	2.31	2.02	0.54	0.26	0.00
57	720	0.12	0.35	0.00	0.00	0.05	24.83	0.00	0.00
58	744	0.07	0.56	0.00	0.00	0.02	36.54	0.00	0.00
59	720	0.01	0.32	0.00	0.00	0.01	30.75	0.00	0.00
60	744	1.62	0.75	5.83	9.62	39.96	10.00	0.00	0.00

Table C1- NODOS Project, Power Operations, "Incidental", Alt C

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Incidental Pumping and Generation to Water Releases (no shaping)							
		Incidental Pumping , MW					Incidental Generation, MW		
		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Plant Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
61	744	2.05	0.30	2.27	32.51	66.47	0.00	0.00	0.00
62	672	2.44	0.47	3.95	44.01	94.21	0.37	0.00	0.00
63	744	2.44	1.76	18.06	44.01	139.51	8.38	0.00	0.00
64	720	2.15	2.67	8.65	0.00	73.77	1.27	0.00	0.00
65	744	2.58	2.86	6.00	1.33	59.19	12.80	0.00	0.00
66	720	0.66	1.67	0.00	34.96	0.29	57.85	7.32	0.00
67	744	0.70	1.55	0.00	36.59	0.26	55.69	7.30	0.00
68	744	1.18	2.01	0.00	0.97	0.00	24.53	0.61	4.70
69	720	0.11	0.35	0.00	0.00	0.00	9.42	1.41	9.07
70	744	0.26	0.76	0.00	0.00	0.00	8.08	0.14	9.11
71	720	0.02	0.46	0.00	0.00	0.00	7.69	0.05	9.08
72	744	0.00	0.27	0.00	0.00	0.00	0.49	0.05	5.07
73	744	2.28	0.24	1.85	36.37	101.85	0.00	0.00	0.00
74	696	1.83	0.31	2.24	21.80	84.98	0.00	0.00	0.00
75	744	2.43	1.44	13.64	13.93	128.23	0.00	0.00	0.00
76	720	0.05	2.77	6.11	0.00	20.69	24.83	0.00	0.00
77	744	0.46	2.14	0.00	0.00	0.31	1.31	0.40	0.36
78	720	0.39	1.66	0.00	0.46	0.00	0.69	7.38	5.82
79	744	0.42	1.50	0.00	24.05	0.02	1.49	7.55	0.00
80	744	0.70	1.29	0.00	0.70	0.00	24.47	5.07	6.56
81	720	0.06	0.34	0.00	0.00	0.00	16.73	1.84	9.07
82	744	0.04	0.41	0.00	0.00	0.00	8.43	2.36	2.42
83	720	0.00	0.25	0.00	0.00	0.00	0.54	1.21	5.86
84	744	0.00	0.15	0.00	0.00	0.00	0.00	0.09	4.70
85	744	2.28	0.27	1.81	38.52	110.89	0.00	0.00	0.15
86	672	2.44	0.47	3.81	27.81	118.63	0.00	0.00	0.00
87	744	0.01	0.10	0.00	0.00	0.08	0.00	0.00	0.00
88	720	0.06	2.00	0.00	0.00	0.65	22.95	0.02	0.00
89	744	0.20	1.89	0.00	0.14	0.00	18.21	0.69	0.00
90	720	0.50	1.62	0.00	2.37	0.00	51.29	7.19	0.18
91	744	1.24	1.78	0.00	0.00	0.00	53.56	5.96	4.41
92	744	1.00	2.03	0.00	0.00	0.00	33.01	0.44	5.38
93	720	0.09	0.36	0.00	0.00	0.00	22.72	1.72	9.08
94	744	0.07	0.43	0.00	0.00	0.00	20.96	2.56	9.00
95	720	0.02	0.33	0.00	0.00	0.00	18.60	1.56	9.10
96	744	0.00	0.18	0.00	0.00	0.00	0.13	0.09	0.83
97	744	2.12	0.37	2.73	33.66	102.75	0.00	0.00	0.00
98	672	2.26	0.49	3.95	38.61	120.06	0.00	0.00	0.00
99	744	2.13	0.28	1.83	3.05	66.87	0.00	0.05	0.00
100	720	0.17	1.77	0.00	1.92	0.31	0.81	0.67	0.44
101	744	0.52	2.02	0.00	0.00	0.00	8.85	0.51	9.10
102	720	0.48	1.57	0.00	0.00	0.00	11.56	7.32	9.07
103	744	0.50	1.48	0.00	25.43	0.00	50.55	7.64	0.05
104	744	0.38	1.00	0.00	0.00	0.00	10.53	5.80	9.11
105	720	0.15	0.54	0.00	0.00	0.00	7.69	0.44	8.86
106	744	0.07	0.69	0.00	0.00	0.01	0.47	0.00	0.69
107	720	0.01	0.32	0.00	0.00	0.01	0.02	0.00	0.00
108	744	1.74	1.16	9.45	24.98	104.10	0.00	0.00	0.00
109	744	2.36	0.37	2.73	41.51	122.79	0.00	0.00	0.00
110	672	1.27	0.06	0.00	3.30	40.30	0.00	0.00	0.00
111	744	0.01	0.07	0.00	0.00	0.06	0.01	0.00	0.00
112	720	0.07	1.41	0.00	0.00	0.49	0.15	0.00	0.00
113	744	0.74	2.28	0.82	0.45	3.38	0.25	0.00	0.00
114	720	0.62	2.78	0.00	8.31	3.58	5.01	0.00	0.00
115	744	1.54	2.79	0.00	0.17	0.00	61.68	0.03	4.53
116	744	1.22	2.07	0.00	0.00	0.00	13.23	0.12	4.81
117	720	0.09	0.38	0.00	0.00	0.00	24.86	1.27	2.75
118	744	0.58	2.08	12.35	2.48	57.67	10.14	0.00	0.19
119	720	0.00	0.24	0.00	0.00	0.00	9.07	0.86	1.32
120	744	0.00	0.20	0.00	1.78	3.96	0.08	0.06	0.04

Table C1- NODOS Project, Power Operations, "Incidental", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Incidental Pumping and Generation to Water Releases (no shaping)							
		Incidental Pumping , MW					Incidental Generation, MW		
		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Plant Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
121	744	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
122	696	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
123	744	0.02	0.05	0.00	0.00	0.08	1.70	0.00	0.00
124	720	0.05	1.31	0.00	0.00	0.40	26.04	0.00	0.00
125	744	0.63	2.06	0.00	0.51	0.64	26.32	0.00	0.00
126	720	0.63	2.85	0.00	8.60	0.40	20.96	0.02	0.00
127	744	0.73	2.79	0.00	12.94	5.98	47.01	0.00	0.06
128	744	1.17	2.05	0.00	0.00	0.00	23.16	0.03	4.06
129	720	0.28	1.61	9.01	0.00	27.36	16.57	0.10	0.35
130	744	0.19	0.45	0.00	0.00	0.00	7.31	2.36	1.31
131	720	0.39	0.26	0.00	2.52	14.65	0.36	0.20	0.03
132	744	0.00	0.08	0.00	0.00	0.00	0.00	0.61	0.00
133	744	0.00	0.13	0.00	0.00	0.00	0.00	0.03	0.00
134	672	0.00	0.06	0.00	0.00	0.02	0.00	0.00	0.00
135	744	0.05	0.13	0.00	0.00	0.19	0.00	0.06	0.00
136	720	0.09	2.34	0.00	0.00	0.00	0.00	1.17	0.00
137	744	0.34	2.21	0.00	0.00	0.00	0.58	0.48	0.07
138	720	0.52	1.64	0.00	0.00	0.00	10.08	7.38	2.08
139	744	0.58	1.39	0.00	0.00	0.00	58.38	7.39	9.08
140	744	0.91	1.65	0.00	0.00	0.00	3.47	2.28	9.00
141	720	0.08	0.33	0.00	0.00	0.00	32.00	1.71	9.02
142	744	0.03	0.42	0.00	0.00	0.00	26.50	2.29	9.01
143	720	2.03	1.32	9.80	29.23	111.92	25.39	0.00	0.00
144	744	2.05	1.40	11.39	11.23	102.39	0.00	0.00	0.00
145	744	0.03	0.12	0.00	1.54	4.07	0.00	0.00	0.00
146	672	2.44	0.39	3.37	2.80	77.77	0.00	0.00	0.00
147	744	0.21	0.10	0.00	2.52	10.65	0.04	0.00	0.83
148	720	0.19	2.17	0.00	0.00	0.00	0.90	0.00	9.10
149	744	0.74	2.22	0.00	0.00	0.00	12.56	0.32	9.00
150	720	0.44	1.55	0.00	0.00	0.00	48.11	7.45	9.00
151	744	0.47	1.40	0.00	0.00	0.00	6.27	7.33	9.00
152	744	0.79	2.00	0.00	0.00	0.00	45.16	0.50	9.00
153	720	0.28	0.55	0.00	0.00	0.00	18.63	0.05	9.08
154	744	0.16	0.74	0.00	0.00	0.00	10.04	0.07	6.03
155	720	0.01	0.27	0.00	0.00	0.00	7.02	0.05	6.04
156	744	0.00	0.21	0.00	0.00	0.00	0.40	0.00	0.33
157	744	2.28	0.29	2.40	38.48	98.32	0.00	0.00	0.00
158	672	2.09	0.49	3.95	33.70	101.78	0.00	0.00	0.00
159	744	2.43	1.79	17.87	44.01	164.58	0.02	0.00	0.00
160	720	0.40	2.76	7.08	0.00	35.14	0.10	0.01	0.00
161	744	0.10	1.89	0.00	0.97	0.00	0.12	1.31	0.00
162	720	0.37	1.64	0.00	22.33	0.00	1.07	7.42	0.13
163	744	0.42	1.40	0.00	0.00	0.00	19.12	7.39	9.06
164	744	0.69	2.01	0.00	0.00	0.00	11.44	0.52	8.71
165	720	0.05	0.36	0.00	0.00	0.00	27.67	1.37	9.10
166	744	0.17	0.76	0.00	0.00	0.00	13.82	0.16	5.68
167	720	0.02	0.54	0.00	0.00	0.00	28.63	0.11	9.11
168	744	0.00	0.14	0.00	0.00	0.00	9.69	0.90	4.06
169	744	0.40	0.07	0.00	2.48	12.99	0.00	0.06	0.18
170	696	2.18	0.49	3.95	34.58	107.91	0.00	0.00	0.00
171	744	2.21	1.59	15.14	28.93	142.42	0.07	0.00	0.00
172	720	0.18	2.17	0.00	0.00	0.00	0.84	0.00	9.10
173	744	0.24	2.21	0.00	0.32	0.00	10.58	0.47	9.11
174	720	0.14	1.69	0.00	15.48	0.00	36.58	7.12	0.00
175	744	0.14	1.91	0.00	0.10	0.00	57.37	4.22	9.10
176	744	0.25	2.03	0.00	0.00	0.00	29.93	0.19	9.00
177	720	0.12	0.62	0.00	0.00	0.00	14.59	0.00	9.00
178	744	0.09	0.74	0.00	0.00	0.00	1.20	0.00	9.00
179	720	0.01	0.41	0.00	0.00	0.00	5.18	0.00	9.08
180	744	0.00	0.16	0.00	0.00	0.00	0.27	0.00	5.83

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Incidental Pumping and Generation to Water Releases (no shaping)							
		Incidental Pumping , MW					Incidental Generation, MW		
		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Plant Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
181	744	2.20	0.27	1.81	36.03	96.72	0.00	0.00	0.06
182	672	0.09	0.06	0.00	0.62	3.12	0.00	0.00	0.97
183	744	0.01	0.10	0.00	0.00	0.00	0.06	0.30	9.11
184	720	0.00	1.25	0.00	0.00	0.00	0.31	5.66	8.43
185	744	0.00	1.12	0.00	0.00	0.00	0.46	5.64	7.74
186	720	0.03	1.86	0.00	0.00	0.00	6.87	5.94	9.06
187	744	0.00	2.74	0.00	0.00	0.00	24.34	0.31	9.00
188	744	0.00	2.09	0.00	0.00	0.00	26.02	0.00	9.00
189	720	0.00	0.61	0.00	0.00	0.00	34.04	0.00	9.00
190	744	0.06	0.77	0.00	0.00	0.00	11.53	0.00	9.08
191	720	0.01	0.43	0.00	0.00	0.00	27.28	0.00	5.60
192	744	0.00	0.21	0.00	0.00	0.00	0.00	0.00	4.77
193	744	0.00	0.13	0.00	0.00	0.00	0.00	0.00	1.15
194	672	0.00	0.08	0.00	0.00	0.00	0.00	0.00	9.07
195	744	2.04	1.49	14.25	29.72	84.73	0.08	0.00	0.00
196	720	0.92	2.74	5.74	0.00	30.93	0.82	0.29	0.86
197	744	0.11	1.36	0.00	0.00	0.00	11.40	5.66	9.10
198	720	0.37	2.80	0.00	0.00	0.00	34.49	0.38	9.00
199	744	0.38	2.71	0.00	0.00	0.00	57.44	0.00	9.00
200	744	0.30	1.98	0.00	0.00	0.00	27.13	0.00	9.06
201	720	0.11	0.38	0.00	0.00	0.00	25.02	0.00	5.53
202	744	0.07	0.71	0.00	0.00	0.00	23.24	0.00	5.30
203	720	0.01	0.51	0.00	0.00	0.00	12.76	0.00	0.37
204	744	0.00	0.30	0.00	0.00	0.00	0.60	0.00	0.00
205	744	2.38	0.09	0.46	20.31	50.80	0.00	0.00	0.04
206	672	0.00	0.06	0.00	0.00	0.00	0.00	0.00	6.09
207	744	0.01	0.10	0.00	0.00	0.00	0.60	0.30	0.85
208	720	0.00	1.64	0.00	0.00	0.00	9.95	5.43	7.25
209	744	0.00	1.57	0.00	0.00	0.00	0.00	0.78	4.43
210	720	0.00	1.70	0.00	17.20	0.00	3.11	7.05	0.03
211	744	0.00	2.73	0.00	0.19	0.00	45.31	0.40	2.29
212	744	0.00	1.94	0.00	2.26	2.32	20.78	0.00	0.02
213	720	0.00	0.59	0.00	2.56	2.67	31.82	0.00	0.20
214	744	0.06	0.77	0.00	0.00	0.00	2.29	0.00	3.03
215	720	0.02	0.53	0.00	0.00	0.00	26.26	0.00	0.20
216	744	0.00	0.27	0.00	0.00	0.00	0.00	0.00	0.00
217	744	0.00	0.14	0.00	0.00	0.00	0.00	0.00	0.00
218	696	0.00	0.07	0.00	0.00	0.00	0.00	0.00	0.00
219	744	2.43	1.72	17.28	44.01	96.17	0.19	0.00	0.00
220	720	0.08	0.87	0.00	10.30	0.99	0.32	4.75	0.00
221	744	0.05	0.98	0.00	13.69	0.03	3.44	5.57	0.00
222	720	0.06	1.27	0.00	22.13	0.02	55.63	7.41	0.00
223	744	0.09	1.19	0.00	19.13	0.01	54.45	6.89	0.00
224	744	0.50	1.37	0.00	0.31	0.00	11.73	0.43	9.09
225	720	0.08	0.45	0.00	0.00	0.00	8.66	0.00	5.98
226	744	0.08	0.56	0.00	0.00	0.00	0.70	0.00	9.08
227	720	0.02	0.38	0.00	0.00	0.00	3.98	0.00	9.06
228	744	0.00	0.16	0.00	0.00	0.00	0.13	0.00	5.42
229	744	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.34
230	672	1.68	0.40	3.25	20.69	45.79	0.01	0.00	0.00
231	744	2.28	1.33	13.03	20.89	84.23	0.05	0.32	0.00
232	720	0.04	0.95	0.00	1.92	0.00	0.72	4.84	0.18
233	744	0.12	1.42	0.00	0.44	0.00	10.76	2.65	7.32
234	720	0.09	1.21	0.00	19.18	0.01	43.30	6.99	0.00
235	744	0.13	1.18	0.00	21.16	0.00	2.84	6.97	0.00
236	744	0.58	1.40	0.00	0.00	0.00	10.17	0.29	9.11
237	720	0.12	0.45	0.00	0.00	0.00	33.12	0.00	9.00
238	744	0.06	0.52	0.00	0.00	0.00	10.00	0.00	9.05
239	720	0.02	0.38	0.00	0.00	0.00	0.00	0.00	6.81
240	744	0.69	0.12	0.00	2.52	10.43	0.00	0.00	0.47

Table C1- NODOS Project, Power Operations, "Incidental", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Incidental Pumping and Generation to Water Releases (no shaping)							
		Incidental Pumping , MW					Incidental Generation, MW		
		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Plant Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
241	744	1.81	0.25	1.81	26.74	52.44	0.00	0.00	0.00
242	672	1.92	0.35	2.80	29.25	66.46	0.00	0.00	0.00
243	744	2.05	1.53	14.45	32.51	106.44	0.06	0.00	0.00
244	720	2.28	2.80	6.38	0.00	59.97	0.95	0.00	0.00
245	744	2.58	2.87	9.43	0.00	66.00	0.43	0.00	0.00
246	720	2.56	2.80	2.00	44.01	93.44	4.15	0.37	0.00
247	744	0.68	1.60	0.00	32.69	0.14	11.56	7.01	0.00
248	744	1.12	2.03	0.00	0.19	0.00	0.20	0.43	4.06
249	720	0.34	0.63	0.00	0.00	0.00	20.20	0.05	5.40
250	744	0.17	0.74	0.00	0.00	0.00	12.75	0.07	9.11
251	720	0.02	0.44	0.00	0.00	0.00	30.24	0.05	9.10
252	744	0.83	0.24	0.00	2.52	20.73	5.62	0.00	0.90
253	744	0.00	0.08	0.00	0.00	0.00	0.00	0.00	0.00
254	672	2.44	0.49	3.95	42.65	119.89	0.00	0.00	0.00
255	744	0.03	0.06	0.00	0.00	0.00	0.07	0.33	3.98
256	720	0.06	1.08	0.00	17.08	0.10	1.34	6.18	0.04
257	744	0.20	0.79	0.00	12.36	0.21	1.34	5.03	0.17
258	720	0.37	1.22	0.00	0.00	0.00	18.91	7.47	9.10
259	744	1.08	1.14	0.00	0.00	0.00	39.28	6.38	9.00
260	744	1.06	0.98	0.00	0.00	0.00	1.13	2.81	9.00
261	720	0.33	0.42	0.00	0.00	0.00	33.79	0.16	9.08
262	744	0.13	0.54	0.00	0.00	0.00	11.90	0.00	9.06
263	720	0.01	0.22	0.00	0.00	0.00	28.11	0.00	7.09
264	744	0.00	0.14	0.00	0.00	0.00	0.31	0.00	0.45
265	744	2.43	0.35	2.73	44.01	99.98	0.00	0.00	0.00
266	696	2.44	0.47	3.95	44.01	112.93	0.02	0.00	0.00
267	744	2.20	1.61	15.84	36.81	143.24	0.00	0.00	0.00
268	720	2.27	2.78	6.95	0.00	74.96	18.05	0.00	0.00
269	744	1.36	2.87	9.14	0.42	50.75	26.97	0.00	0.00
270	720	0.57	2.80	0.00	7.66	0.47	33.72	0.00	0.00
271	744	0.71	2.79	0.00	14.90	8.70	2.39	0.00	0.00
272	744	1.20	2.25	1.24	0.59	4.76	8.10	0.00	0.25
273	720	0.37	0.61	0.00	0.00	0.00	9.73	0.18	5.24
274	744	0.10	0.47	0.00	0.00	0.00	19.11	2.42	9.06
275	720	0.03	0.33	0.00	0.00	0.00	15.15	1.64	9.09
276	744	2.05	1.31	11.27	19.16	120.51	19.86	0.00	0.00
277	744	0.00	0.07	0.00	0.00	0.00	0.76	0.00	0.00
278	672	0.00	0.06	0.00	0.00	0.00	0.80	0.00	0.00
279	744	0.02	0.09	0.00	0.00	0.08	12.16	0.00	0.00
280	720	0.37	1.79	0.00	0.00	0.21	29.75	0.00	0.00
281	744	0.45	1.67	0.00	0.36	0.54	5.83	0.01	0.00
282	720	0.63	2.77	0.00	9.40	0.53	0.31	0.79	0.00
283	744	0.82	1.60	0.00	0.33	0.00	0.02	7.09	1.23
284	744	1.21	1.67	0.00	0.00	0.00	0.08	2.73	2.30
285	720	0.10	0.33	0.00	0.00	0.00	0.08	1.85	9.08
286	744	0.02	0.40	0.00	0.00	0.00	0.01	2.44	9.00
287	720	0.01	0.27	0.00	0.00	0.00	0.01	1.34	9.09
288	744	2.20	1.39	12.30	34.39	134.95	0.00	0.00	0.00
289	744	2.44	0.37	2.73	18.72	104.81	0.00	0.00	0.20
290	672	0.00	0.06	0.00	0.00	0.00	0.00	0.00	4.76
291	744	0.41	0.17	0.00	2.41	14.36	0.00	0.00	0.12
292	720	0.37	2.60	0.00	0.00	0.41	0.00	0.02	0.00
293	744	0.35	2.01	0.00	0.00	0.00	0.49	0.52	0.34
294	720	0.41	2.14	0.00	0.00	0.00	6.26	4.46	6.54
295	744	0.48	1.42	0.00	0.00	0.00	59.33	7.20	9.09
296	744	0.75	1.83	0.00	0.00	0.00	12.49	0.92	8.47
297	720	0.07	0.35	0.00	0.00	0.00	10.00	1.60	9.04
298	744	0.05	0.43	0.00	0.00	0.00	13.76	2.50	9.00
299	720	0.01	0.20	0.00	0.00	0.00	24.50	0.94	9.10
300	744	2.43	0.57	3.27	23.77	97.81	9.17	0.00	0.00

Table C1- NODOS Project, Power Operations, "Incidental", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Incidental Pumping and Generation to Water Releases (no shaping)							
		Incidental Pumping , MW					Incidental Generation, MW		
		TC Canal	GCID Canal	TRR	Sac River	Sites	Sites	TRR	Sac River
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35	123.00	9.33	10.80
Plant Capacity, cfs		2250	3000	1890	2000	5900	5100	1500	1500
Month	# of Hours	All Hours					All Hours		
301	744	2.35	0.37	2.67	41.51	116.77	0.00	0.00	0.00
302	672	2.44	0.49	3.95	44.01	132.32	0.00	0.00	0.00
303	744	0.05	0.09	0.00	2.52	6.79	0.05	0.00	0.00
304	720	0.04	1.63	0.00	0.00	0.43	0.07	0.00	0.00
305	744	0.12	1.23	0.00	0.44	0.57	3.25	0.00	0.00
306	720	0.56	2.81	0.00	11.35	6.40	56.59	0.00	0.00
307	744	0.74	2.80	0.00	9.88	0.02	4.18	0.00	0.00
308	744	1.23	2.09	0.00	0.00	0.00	19.96	0.03	4.24
309	720	0.34	1.63	9.01	0.00	27.49	17.67	0.15	0.41
310	744	0.05	0.44	0.00	0.00	0.00	9.66	2.32	1.30
311	720	0.46	0.40	0.00	2.59	16.87	9.01	0.19	0.06
312	744	0.00	0.15	0.00	0.00	0.00	0.35	0.94	0.00
313	744	0.00	0.08	0.00	0.00	0.00	0.00	0.05	0.00
314	696	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00
315	744	0.01	0.09	0.00	0.00	0.12	0.07	0.00	0.00
316	720	0.17	1.98	0.55	0.00	2.44	0.83	0.00	0.00
317	744	0.80	2.20	0.00	0.45	0.58	10.90	0.08	0.00
318	720	0.56	2.51	0.00	5.94	0.00	27.20	1.64	0.22
319	744	0.66	1.45	0.00	0.00	0.00	25.47	7.07	9.10
320	744	1.10	1.90	0.00	0.00	0.00	12.09	0.54	5.80
321	720	0.11	0.36	0.00	0.00	0.00	33.38	1.70	9.08
322	744	0.08	0.44	0.00	0.00	0.00	33.47	2.53	9.00
323	720	0.01	0.28	0.00	0.00	0.00	24.74	1.33	9.10
324	744	0.00	0.29	0.00	2.04	3.96	1.42	0.08	0.54
325	744	2.12	0.25	2.02	34.58	101.13	0.00	0.00	0.00
326	672	2.44	0.47	3.81	44.01	128.19	0.00	0.00	0.00
327	744	2.22	0.07	0.00	2.52	62.50	0.00	0.00	0.00
328	720	0.07	1.88	0.00	0.00	0.57	1.59	0.00	0.00
329	744	0.72	1.76	0.00	0.00	0.62	26.42	0.46	0.08
330	720	0.72	1.57	0.00	0.00	0.00	2.41	7.32	1.93
331	744	0.70	1.35	0.00	0.00	0.00	0.99	7.60	9.10
332	744	0.55	1.12	0.00	0.00	0.00	26.88	5.91	8.00
333	720	0.30	0.56	0.00	0.00	0.00	18.20	0.36	5.62
334	744	0.07	0.70	0.00	0.00	0.00	1.03	0.07	9.06
335	720	0.01	0.51	0.00	0.00	0.00	0.03	0.11	9.08
336	744	0.00	0.16	0.00	0.00	0.00	0.00	1.00	3.86
337	744	2.44	0.34	2.40	15.21	84.68	0.00	0.00	0.20
338	672	2.09	0.25	1.68	33.70	100.03	0.00	0.00	0.00
339	744	2.28	1.67	16.46	37.23	156.42	0.04	0.00	0.00
340	720	0.23	1.97	0.00	0.00	0.47	0.15	0.00	7.61
341	744	0.18	2.20	0.00	0.00	0.00	0.18	0.40	9.09
342	720	0.20	1.62	0.00	21.74	0.00	0.21	7.38	0.26
343	744	0.22	1.47	0.00	20.87	0.00	0.50	7.60	0.00
344	744	0.17	0.83	0.00	0.16	0.00	9.80	6.01	9.10
345	720	0.07	0.28	0.00	0.00	0.00	9.92	1.84	9.00
346	744	0.02	0.42	0.00	0.00	0.00	0.00	2.44	9.08
347	720	0.01	0.20	0.00	0.00	0.00	5.08	1.03	4.50
348	744	0.00	0.15	0.00	0.00	0.00	0.14	0.08	4.61
349	744	2.20	0.22	1.36	36.01	100.53	0.00	0.00	0.08
350	672	0.55	0.06	0.00	2.80	18.81	0.00	0.00	0.00
351	744	2.44	0.48	3.54	5.95	79.66	0.02	0.42	0.18
352	720	0.08	1.51	0.00	0.00	0.00	0.14	6.66	3.39
353	744	0.26	1.10	0.00	0.00	0.00	0.15	5.54	8.32
354	720	0.39	1.81	0.00	0.00	0.00	0.36	6.56	8.80
355	744	0.43	1.39	0.00	0.00	0.00	0.67	7.39	9.03
356	744	0.72	1.48	0.00	0.00	0.00	8.98	3.19	9.00
357	720	0.07	0.33	0.00	0.00	0.00	0.26	1.74	9.00
358	744	0.06	0.43	0.00	0.00	0.00	9.34	2.49	9.00
359	720	0.01	0.26	0.00	0.00	0.00	0.17	1.25	9.09
360	744	2.13	1.35	11.80	32.29	100.44	1.74	0.00	0.00

Table C1- NODOS Project, Power Operations, "Incidental", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Optimized Pumping (for Sites Plant)									
		Incidental Pumping , MW				Optimized Pumping					
		TC Canal	GCID Canal	TRR	Sac River	Sites					
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35					
Plant Capacity, cfs		2250	3000	1890	2000	MaxQ=5900 cfs					
Month	# of Hours	All Hours				On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
1	744	2.28	0.37	2.73	39.11	79.00	32924	169.89	55732	2305	5900
2	672	1.46	0.06	0.00	3.13	0.00	0	104.73	30207	0	5900
3	744	0.03	0.09	0.00	0.00	0.00	0	0.00	0	0	0
4	720	0.49	2.11	0.00	0.00	0.00	0	0.00	0	0	0
5	744	0.45	2.12	0.00	0.00	0.00	0	0.00	0	0	0
6	720	0.59	1.66	0.00	0.53	0.00	0	0.00	0	0	0
7	744	0.65	1.55	0.00	30.75	0.00	0	0.00	0	0	0
8	744	1.10	2.03	0.00	1.01	0.00	0	0.00	0	0	0
9	720	0.09	0.35	0.00	0.00	0.00	0	0.00	0	0	0
10	744	0.08	0.69	0.00	0.00	0.00	0	0.00	0	0	0
11	720	2.44	1.55	12.30	42.85	110.00	45589	168.00	63794	3336	5900
12	744	1.39	0.19	0.00	2.52	0.00	0	80.24	30910	0	5680
13	744	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
14	672	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
15	744	0.01	0.09	0.00	0.00	0.00	0	0.00	0	0	0
16	720	0.08	1.87	0.00	0.00	0.00	0	0.00	0	0	0
17	744	0.83	2.25	0.32	0.33	0.00	0	0.00	0	0	0
18	720	0.66	2.70	0.00	8.05	0.00	0	0.00	0	0	0
19	744	1.31	2.35	0.00	0.00	0.00	0	0.00	0	0	0
20	744	1.20	2.81	6.01	2.17	0.00	0	42.96	17481	0	4695
21	720	0.11	0.39	0.00	0.00	0.00	0	0.00	0	0	0
22	744	0.10	0.41	0.00	0.00	0.00	0	0.00	0	0	0
23	720	0.01	0.30	0.00	0.00	0.00	0	0.00	0	0	0
24	744	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
25	744	0.00	0.13	0.00	2.41	0.00	0	0.00	0	0	0
26	696	2.00	0.49	3.95	29.40	27.00	10797	172.65	65326	795	5900
27	744	0.24	0.10	0.00	2.52	0.00	0	24.06	8791	0	3985
28	720	0.09	1.95	0.00	0.00	0.00	0	0.00	0	0	0
29	744	0.99	2.20	0.00	0.41	0.00	0	0.00	0	0	0
30	720	0.63	1.93	0.00	7.86	0.00	0	0.00	0	0	0
31	744	0.65	1.53	0.00	0.16	0.00	0	0.00	0	0	0
32	744	1.58	2.76	5.85	2.52	0.00	0	60.36	24705	0	5308
33	720	0.11	0.37	0.00	0.00	0.00	0	0.00	0	0	0
34	744	0.01	0.39	0.00	0.00	0.00	0	0.00	0	0	0
35	720	0.00	0.31	0.00	0.00	0.00	0	0.00	0	0	0
36	744	0.00	0.15	0.00	0.00	0.00	0	0.00	0	0	0
37	744	0.00	0.13	0.00	0.00	0.00	0	0.00	0	0	0
38	672	0.08	0.09	0.00	0.00	0.00	0	0.00	0	0	0
39	744	2.31	0.37	1.01	5.64	0.00	0	122.47	49721	0	5900
40	720	0.08	2.46	0.00	0.00	0.00	0	0.00	0	0	0
41	744	0.10	2.26	0.00	0.00	0.00	0	0.00	0	0	0
42	720	0.05	1.65	0.00	0.00	0.00	0	0.00	0	0	0
43	744	0.06	1.39	0.00	0.00	0.00	0	0.00	0	0	0
44	744	0.09	1.89	0.00	0.00	0.00	0	0.00	0	0	0
45	720	0.04	0.58	0.00	0.00	0.00	0	0.00	0	0	0
46	744	0.07	0.76	0.00	0.00	0.00	0	0.00	0	0	0
47	720	0.01	0.52	0.00	0.00	0.00	0	0.00	0	0	0
48	744	0.00	0.27	0.00	0.00	0.00	0	0.00	0	0	0
49	744	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
50	672	0.01	0.08	0.00	0.00	0.00	0	0.00	0	0	0
51	744	0.04	0.11	0.00	0.00	0.00	0	0.00	0	0	0
52	720	0.02	1.12	0.00	0.00	0.00	0	0.00	0	0	0
53	744	0.01	0.73	0.00	0.00	0.00	0	0.00	0	0	0
54	720	0.03	1.14	0.00	0.00	0.00	0	0.00	0	0	0
55	744	0.29	1.36	0.00	0.00	0.00	0	0.00	0	0	0
56	744	0.43	1.30	0.00	2.31	0.00	0	0.00	0	0	0
57	720	0.12	0.35	0.00	0.00	0.00	0	0.00	0	0	0
58	744	0.07	0.56	0.00	0.00	0.00	0	0.00	0	0	0
59	720	0.01	0.32	0.00	0.00	0.00	0	0.00	0	0	0
60	744	1.62	0.75	5.83	9.62	0.00	0	69.90	29896	0	5900

Table C2- NODOS Project, Power Operations, "Optimized", Alt C

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Optimized Pumping (for Sites Plant)									
		Incidental Pumping , MW				Optimized Pumping					
		TC Canal	GCID Canal	TRR	Sac River	Sites					
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35					
Plant Capacity, cfs		2250	3000	1890	2000	MaxQ=5900 cfs					
Month	# of Hours	All Hours				On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
61	744	2.05	0.30	2.27	32.51	10.00	4113	106.95	45669	457	5900
62	672	2.44	0.47	3.95	44.01	34.00	13189	123.00	50360	1412	5900
63	744	2.44	1.76	18.06	44.01	104.00	43177	140.80	60633	3648	5900
64	720	2.15	2.67	8.65	0.00	0.00	0	138.53	53345	0	5900
65	744	2.58	2.86	6.00	1.33	0.00	0	108.93	44142	0	5900
66	720	0.66	1.67	0.00	34.96	0.00	0	0.00	0	0	0
67	744	0.70	1.55	0.00	36.59	0.00	0	0.00	0	0	0
68	744	1.18	2.01	0.00	0.97	0.00	0	0.00	0	0	0
69	720	0.11	0.35	0.00	0.00	0.00	0	0.00	0	0	0
70	744	0.26	0.76	0.00	0.00	0.00	0	0.00	0	0	0
71	720	0.02	0.46	0.00	0.00	0.00	0	0.00	0	0	0
72	744	0.00	0.27	0.00	0.00	0.00	0	0.00	0	0	0
73	744	2.28	0.24	1.85	36.37	20.00	8120	152.22	67971	635	5900
74	696	1.83	0.31	2.24	21.80	0.00	0	143.63	59366	0	5900
75	744	2.43	1.44	13.64	13.93	55.00	23698	172.10	71988	1638	5900
76	720	0.05	2.77	6.11	0.00	0.00	0	40.42	14898	0	4432
77	744	0.46	2.14	0.00	0.00	0.00	0	0.00	0	0	0
78	720	0.39	1.66	0.00	0.46	0.00	0	0.00	0	0	0
79	744	0.42	1.50	0.00	24.05	0.00	0	0.00	0	0	0
80	744	0.70	1.29	0.00	0.70	0.00	0	0.00	0	0	0
81	720	0.06	0.34	0.00	0.00	0.00	0	0.00	0	0	0
82	744	0.04	0.41	0.00	0.00	0.00	0	0.00	0	0	0
83	720	0.00	0.25	0.00	0.00	0.00	0	0.00	0	0	0
84	744	0.00	0.15	0.00	0.00	0.00	0	0.00	0	0	0
85	744	2.28	0.27	1.81	38.52	21.00	8845	163.33	73970	644	5900
86	672	2.44	0.47	3.81	27.81	24.00	9226	173.72	70772	699	5900
87	744	0.01	0.10	0.00	0.00	0.00	0	0.00	0	0	0
88	720	0.06	2.00	0.00	0.00	0.00	0	0.00	0	0	0
89	744	0.20	1.89	0.00	0.14	0.00	0	0.00	0	0	0
90	720	0.50	1.62	0.00	2.37	0.00	0	0.00	0	0	0
91	744	1.24	1.78	0.00	0.00	0.00	0	0.00	0	0	0
92	744	1.00	2.03	0.00	0.00	0.00	0	0.00	0	0	0
93	720	0.09	0.36	0.00	0.00	0.00	0	0.00	0	0	0
94	744	0.07	0.43	0.00	0.00	0.00	0	0.00	0	0	0
95	720	0.02	0.33	0.00	0.00	0.00	0	0.00	0	0	0
96	744	0.00	0.18	0.00	0.00	0.00	0	0.00	0	0	0
97	744	2.12	0.37	2.73	33.66	18.00	7913	158.32	68850	595	5900
98	672	2.26	0.49	3.95	38.61	34.00	13186	167.51	67759	1037	5900
99	744	2.13	0.28	1.83	3.05	0.00	0	119.48	49857	0	5900
100	720	0.17	1.77	0.00	1.92	0.00	0	0.00	0	0	0
101	744	0.52	2.02	0.00	0.00	0.00	0	0.00	0	0	0
102	720	0.48	1.57	0.00	0.00	0.00	0	0.00	0	0	0
103	744	0.50	1.48	0.00	25.43	0.00	0	0.00	0	0	0
104	744	0.38	1.00	0.00	0.00	0.00	0	0.00	0	0	0
105	720	0.15	0.54	0.00	0.00	0.00	0	0.00	0	0	0
106	744	0.07	0.69	0.00	0.00	0.00	0	0.00	0	0	0
107	720	0.01	0.32	0.00	0.00	0.00	0	0.00	0	0	0
108	744	1.74	1.16	9.45	24.98	19.00	7737	157.67	70028	584	5900
109	744	2.36	0.37	2.73	41.51	39.00	17062	170.19	74590	1193	5900
110	672	1.27	0.06	0.00	3.30	0.00	0	65.01	27098	0	4141
111	744	0.01	0.07	0.00	0.00	0.00	0	0.00	0	0	0
112	720	0.07	1.41	0.00	0.00	0.00	0	0.00	0	0	0
113	744	0.74	2.28	0.82	0.45	0.00	0	0.00	0	0	0
114	720	0.62	2.78	0.00	8.31	0.00	0	0.00	0	0	0
115	744	1.54	2.79	0.00	0.17	0.00	0	0.00	0	0	0
116	744	1.22	2.07	0.00	0.00	0.00	0	0.00	0	0	0
117	720	0.09	0.38	0.00	0.00	0.00	0	0.00	0	0	0
118	744	0.58	2.08	12.35	2.48	0.00	0	99.71	42968	0	5900
119	720	0.00	0.24	0.00	0.00	0.00	0	0.00	0	0	0
120	744	0.00	0.20	0.00	1.78	0.00	0	0.00	0	0	0

Table C2- NODOS Project, Power Operations, "Optimized", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Optimized Pumping (for Sites Plant)									
		Incidental Pumping , MW				Optimized Pumping					
		TC Canal	GCID Canal	TRR	Sac River	Sites					
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35					
Plant Capacity, cfs		2250	3000	1890	2000	MaxQ=5900 cfs					
Month	# of Hours	All Hours				On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
121	744	0.00	0.07	0.00	0.00	0.00	0	0.00	0	0	0
122	696	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
123	744	0.02	0.05	0.00	0.00	0.00	0	0.00	0	0	0
124	720	0.05	1.31	0.00	0.00	0.00	0	0.00	0	0	0
125	744	0.63	2.06	0.00	0.51	0.00	0	0.00	0	0	0
126	720	0.63	2.85	0.00	8.60	0.00	0	0.00	0	0	0
127	744	0.73	2.79	0.00	12.94	0.00	0	0.00	0	0	0
128	744	1.17	2.05	0.00	0.00	0.00	0	0.00	0	0	0
129	720	0.28	1.61	9.01	0.00	0.00	0	48.12	19704	0	4599
130	744	0.19	0.45	0.00	0.00	0.00	0	0.00	0	0	0
131	720	0.39	0.26	0.00	2.52	0.00	0	23.63	10551	0	3028
132	744	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
133	744	0.00	0.13	0.00	0.00	0.00	0	0.00	0	0	0
134	672	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
135	744	0.05	0.13	0.00	0.00	0.00	0	0.00	0	0	0
136	720	0.09	2.34	0.00	0.00	0.00	0	0.00	0	0	0
137	744	0.34	2.21	0.00	0.00	0.00	0	0.00	0	0	0
138	720	0.52	1.64	0.00	0.00	0.00	0	0.00	0	0	0
139	744	0.58	1.39	0.00	0.00	0.00	0	0.00	0	0	0
140	744	0.91	1.65	0.00	0.00	0.00	0	0.00	0	0	0
141	720	0.08	0.33	0.00	0.00	0.00	0	0.00	0	0	0
142	744	0.03	0.42	0.00	0.00	0.00	0	0.00	0	0	0
143	720	2.03	1.32	9.80	29.23	38.00	15959	152.23	64901	1289	5900
144	744	2.05	1.40	11.39	11.23	11.00	4597	162.87	71909	336	5900
145	744	0.03	0.12	0.00	1.54	0.00	0	0.00	0	0	0
146	672	2.44	0.39	3.37	2.80	0.00	0	125.48	52377	0	5900
147	744	0.21	0.10	0.00	2.52	0.00	0	17.85	7924	0	2727
148	720	0.19	2.17	0.00	0.00	0.00	0	0.00	0	0	0
149	744	0.74	2.22	0.00	0.00	0.00	0	0.00	0	0	0
150	720	0.44	1.55	0.00	0.00	0.00	0	0.00	0	0	0
151	744	0.47	1.40	0.00	0.00	0.00	0	0.00	0	0	0
152	744	0.79	2.00	0.00	0.00	0.00	0	0.00	0	0	0
153	720	0.28	0.55	0.00	0.00	0.00	0	0.00	0	0	0
154	744	0.16	0.74	0.00	0.00	0.00	0	0.00	0	0	0
155	720	0.01	0.27	0.00	0.00	0.00	0	0.00	0	0	0
156	744	0.00	0.21	0.00	0.00	0.00	0	0.00	0	0	0
157	744	2.28	0.29	2.40	38.48	15.00	6403	142.61	67053	534	5900
158	672	2.09	0.49	3.95	33.70	12.00	4496	152.64	64183	388	5900
159	744	2.43	1.79	17.87	44.01	114.00	49328	166.67	73136	3521	5900
160	720	0.40	2.76	7.08	0.00	0.00	0	59.05	25310	0	4340
161	744	0.10	1.89	0.00	0.97	0.00	0	0.00	0	0	0
162	720	0.37	1.64	0.00	22.33	0.00	0	0.00	0	0	0
163	744	0.42	1.40	0.00	0.00	0.00	0	0.00	0	0	0
164	744	0.69	2.01	0.00	0.00	0.00	0	0.00	0	0	0
165	720	0.05	0.36	0.00	0.00	0.00	0	0.00	0	0	0
166	744	0.17	0.76	0.00	0.00	0.00	0	0.00	0	0	0
167	720	0.02	0.54	0.00	0.00	0.00	0	0.00	0	0	0
168	744	0.00	0.14	0.00	0.00	0.00	0	0.00	0	0	0
169	744	0.40	0.07	0.00	2.48	0.00	0	21.23	9662	0	2982
170	696	2.18	0.49	3.95	34.58	23.00	9025	157.75	66366	728	5900
171	744	2.21	1.59	15.14	28.93	68.00	28352	169.64	77821	1988	5900
172	720	0.18	2.17	0.00	0.00	0.00	0	0.00	0	0	0
173	744	0.24	2.21	0.00	0.32	0.00	0	0.00	0	0	0
174	720	0.14	1.69	0.00	15.48	0.00	0	0.00	0	0	0
175	744	0.14	1.91	0.00	0.10	0.00	0	0.00	0	0	0
176	744	0.25	2.03	0.00	0.00	0.00	0	0.00	0	0	0
177	720	0.12	0.62	0.00	0.00	0.00	0	0.00	0	0	0
178	744	0.09	0.74	0.00	0.00	0.00	0	0.00	0	0	0
179	720	0.01	0.41	0.00	0.00	0.00	0	0.00	0	0	0
180	744	0.00	0.16	0.00	0.00	0.00	0	0.00	0	0	0

Table C2- NODOS Project, Power Operations, "Optimized", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Optimized Pumping (for Sites Plant)									
		Incidental Pumping , MW				Optimized Pumping					
		TC Canal	GCID Canal	TRR	Sac River	Sites					
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35					
Plant Capacity, cfs		2250	3000	1890	2000	MaxQ=5900 cfs					
Month	# of Hours	All Hours				On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
181	744	2.20	0.27	1.81	36.03	12.00	5037	147.63	67241	406	5900
182	672	0.09	0.06	0.00	0.62	0.00	0	0.00	0	0	0
183	744	0.01	0.10	0.00	0.00	0.00	0	0.00	0	0	0
184	720	0.00	1.25	0.00	0.00	0.00	0	0.00	0	0	0
185	744	0.00	1.12	0.00	0.00	0.00	0	0.00	0	0	0
186	720	0.03	1.86	0.00	0.00	0.00	0	0.00	0	0	0
187	744	0.00	2.74	0.00	0.00	0.00	0	0.00	0	0	0
188	744	0.00	2.09	0.00	0.00	0.00	0	0.00	0	0	0
189	720	0.00	0.61	0.00	0.00	0.00	0	0.00	0	0	0
190	744	0.06	0.77	0.00	0.00	0.00	0	0.00	0	0	0
191	720	0.01	0.43	0.00	0.00	0.00	0	0.00	0	0	0
192	744	0.00	0.21	0.00	0.00	0.00	0	0.00	0	0	0
193	744	0.00	0.13	0.00	0.00	0.00	0	0.00	0	0	0
194	672	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
195	744	2.04	1.49	14.25	29.72	34.00	14349	104.81	48925	1629	5900
196	720	0.92	2.74	5.74	0.00	0.00	0	52.69	22293	0	4927
197	744	0.11	1.36	0.00	0.00	0.00	0	0.00	0	0	0
198	720	0.37	2.80	0.00	0.00	0.00	0	0.00	0	0	0
199	744	0.38	2.71	0.00	0.00	0.00	0	0.00	0	0	0
200	744	0.30	1.98	0.00	0.00	0.00	0	0.00	0	0	0
201	720	0.11	0.38	0.00	0.00	0.00	0	0.00	0	0	0
202	744	0.07	0.71	0.00	0.00	0.00	0	0.00	0	0	0
203	720	0.01	0.51	0.00	0.00	0.00	0	0.00	0	0	0
204	744	0.00	0.30	0.00	0.00	0.00	0	0.00	0	0	0
205	744	2.38	0.09	0.46	20.31	0.00	0	81.44	38034	0	5900
206	672	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
207	744	0.01	0.10	0.00	0.00	0.00	0	0.00	0	0	0
208	720	0.00	1.64	0.00	0.00	0.00	0	0.00	0	0	0
209	744	0.00	1.57	0.00	0.00	0.00	0	0.00	0	0	0
210	720	0.00	1.70	0.00	17.20	0.00	0	0.00	0	0	0
211	744	0.00	2.73	0.00	0.19	0.00	0	0.00	0	0	0
212	744	0.00	1.94	0.00	2.26	0.00	0	0.00	0	0	0
213	720	0.00	0.59	0.00	2.56	0.00	0	0.00	0	0	0
214	744	0.06	0.77	0.00	0.00	0.00	0	0.00	0	0	0
215	720	0.02	0.53	0.00	0.00	0.00	0	0.00	0	0	0
216	744	0.00	0.27	0.00	0.00	0.00	0	0.00	0	0	0
217	744	0.00	0.14	0.00	0.00	0.00	0	0.00	0	0	0
218	696	0.00	0.07	0.00	0.00	0.00	0	0.00	0	0	0
219	744	2.43	1.72	17.28	44.01	63.00	27300	97.79	44276	3321	5900
220	720	0.08	0.87	0.00	10.30	0.00	0	0.00	0	0	0
221	744	0.05	0.98	0.00	13.69	0.00	0	0.00	0	0	0
222	720	0.06	1.27	0.00	22.13	0.00	0	0.00	0	0	0
223	744	0.09	1.19	0.00	19.13	0.00	0	0.00	0	0	0
224	744	0.50	1.37	0.00	0.31	0.00	0	0.00	0	0	0
225	720	0.08	0.45	0.00	0.00	0.00	0	0.00	0	0	0
226	744	0.08	0.56	0.00	0.00	0.00	0	0.00	0	0	0
227	720	0.02	0.38	0.00	0.00	0.00	0	0.00	0	0	0
228	744	0.00	0.16	0.00	0.00	0.00	0	0.00	0	0	0
229	744	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
230	672	1.68	0.40	3.25	20.69	0.00	0	74.99	30949	0	5900
231	744	2.28	1.33	13.03	20.89	30.00	13084	110.82	49858	1404	5900
232	720	0.04	0.95	0.00	1.92	0.00	0	0.00	0	0	0
233	744	0.12	1.42	0.00	0.44	0.00	0	0.00	0	0	0
234	720	0.09	1.21	0.00	19.18	0.00	0	0.00	0	0	0
235	744	0.13	1.18	0.00	21.16	0.00	0	0.00	0	0	0
236	744	0.58	1.40	0.00	0.00	0.00	0	0.00	0	0	0
237	720	0.12	0.45	0.00	0.00	0.00	0	0.00	0	0	0
238	744	0.06	0.52	0.00	0.00	0.00	0	0.00	0	0	0
239	720	0.02	0.38	0.00	0.00	0.00	0	0.00	0	0	0
240	744	0.69	0.12	0.00	2.52	0.00	0	16.90	7764	0	3385

Table C2- NODOS Project, Power Operations, "Optimized", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)									
		Optimized Pumping (for Sites Plant)									
		Incidental Pumping , MW				Optimized Pumping					
		TC Canal	GCID Canal	TRR	Sac River	Sites					
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35					
Plant Capacity, cfs		2250	3000	1890	2000	MaxQ=5900 cfs					
Month	# of Hours	All Hours				On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
241	744	1.81	0.25	1.81	26.74	0.00	0	85.64	39246	0	5900
242	672	1.92	0.35	2.80	29.25	0.00	0	106.79	44920	0	5900
243	744	2.05	1.53	14.45	32.51	46.00	19305	128.90	60108	1782	5900
244	720	2.28	2.80	6.38	0.00	0.00	0	102.39	43300	0	5900
245	744	2.58	2.87	9.43	0.00	0.00	0	116.26	49260	0	5900
246	720	2.56	2.80	2.00	44.01	7.00	2622	156.90	64975	205	5900
247	744	0.68	1.60	0.00	32.69	0.00	0	0.00	0	0	0
248	744	1.12	2.03	0.00	0.19	0.00	0	0.00	0	0	0
249	720	0.34	0.63	0.00	0.00	0.00	0	0.00	0	0	0
250	744	0.17	0.74	0.00	0.00	0.00	0	0.00	0	0	0
251	720	0.02	0.44	0.00	0.00	0.00	0	0.00	0	0	0
252	744	0.83	0.24	0.00	2.52	0.00	0	33.08	15429	0	3516
253	744	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
254	672	2.44	0.49	3.95	42.65	37.00	14399	157.61	66411	1203	5900
255	744	0.03	0.06	0.00	0.00	0.00	0	0.00	0	0	0
256	720	0.06	1.08	0.00	17.08	0.00	0	0.00	0	0	0
257	744	0.20	0.79	0.00	12.36	0.00	0	0.00	0	0	0
258	720	0.37	1.22	0.00	0.00	0.00	0	0.00	0	0	0
259	744	1.08	1.14	0.00	0.00	0.00	0	0.00	0	0	0
260	744	1.06	0.98	0.00	0.00	0.00	0	0.00	0	0	0
261	720	0.33	0.42	0.00	0.00	0.00	0	0.00	0	0	0
262	744	0.13	0.54	0.00	0.00	0.00	0	0.00	0	0	0
263	720	0.01	0.22	0.00	0.00	0.00	0	0.00	0	0	0
264	744	0.00	0.14	0.00	0.00	0.00	0	0.00	0	0	0
265	744	2.43	0.35	2.73	44.01	32.00	13717	134.70	60951	1211	5900
266	696	2.44	0.47	3.95	44.01	34.00	13163	147.37	65690	1136	5900
267	744	2.20	1.61	15.84	36.81	78.00	33497	160.62	73228	2481	5900
268	720	2.27	2.78	6.95	0.00	0.00	0	126.55	54101	0	5900
269	744	1.36	2.87	9.14	0.42	0.00	0	86.30	37793	0	5633
270	720	0.57	2.80	0.00	7.66	0.00	0	0.00	0	0	0
271	744	0.71	2.79	0.00	14.90	0.00	0	16.02	6471	0	3998
272	744	1.20	2.25	1.24	0.59	0.00	0	0.00	0	0	0
273	720	0.37	0.61	0.00	0.00	0.00	0	0.00	0	0	0
274	744	0.10	0.47	0.00	0.00	0.00	0	0.00	0	0	0
275	720	0.03	0.33	0.00	0.00	0.00	0	0.00	0	0	0
276	744	2.05	1.31	11.27	19.16	28.00	11987	173.34	77976	823	5900
277	744	0.00	0.07	0.00	0.00	0.00	0	0.00	0	0	0
278	672	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
279	744	0.02	0.09	0.00	0.00	0.00	0	0.00	0	0	0
280	720	0.37	1.79	0.00	0.00	0.00	0	0.00	0	0	0
281	744	0.45	1.67	0.00	0.36	0.00	0	0.00	0	0	0
282	720	0.63	2.77	0.00	9.40	0.00	0	0.00	0	0	0
283	744	0.82	1.60	0.00	0.33	0.00	0	0.00	0	0	0
284	744	1.21	1.67	0.00	0.00	0.00	0	0.00	0	0	0
285	720	0.10	0.33	0.00	0.00	0.00	0	0.00	0	0	0
286	744	0.02	0.40	0.00	0.00	0.00	0	0.00	0	0	0
287	720	0.01	0.27	0.00	0.00	0.00	0	0.00	0	0	0
288	744	2.20	1.39	12.30	34.39	64.00	27835	162.93	72784	2032	5900
289	744	2.44	0.37	2.73	18.72	0.00	0	164.67	78249	0	5900
290	672	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
291	744	0.41	0.17	0.00	2.41	0.00	0	23.32	10683	0	2935
292	720	0.37	2.60	0.00	0.00	0.00	0	0.00	0	0	0
293	744	0.35	2.01	0.00	0.00	0.00	0	0.00	0	0	0
294	720	0.41	2.14	0.00	0.00	0.00	0	0.00	0	0	0
295	744	0.48	1.42	0.00	0.00	0.00	0	0.00	0	0	0
296	744	0.75	1.83	0.00	0.00	0.00	0	0.00	0	0	0
297	720	0.07	0.35	0.00	0.00	0.00	0	0.00	0	0	0
298	744	0.05	0.43	0.00	0.00	0.00	0	0.00	0	0	0
299	720	0.01	0.20	0.00	0.00	0.00	0	0.00	0	0	0
300	744	2.43	0.57	3.27	23.77	7.00	3058	151.33	70031	240	5900

Table C2- NODOS Project, Power Operations, "Optimized", Alt C (Cont.)

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NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period (Cont.)

		Optimized Pumping (for Sites Plant)									
		Incidental Pumping , MW				Optimized Pumping					
		TC Canal	GCID Canal	TRR	Sac River	Sites					
Plant Capacity, MW		6.00	3.39	19.68	65.65	181.35					
Plant Capacity, cfs		2250	3000	1890	2000	MaxQ=5900 cfs					
Month	# of Hours	All Hours				On-Peak, MW	On-Peak, MWh	Off-Peak, MW	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
294	720	0.41	2.14	0.00	0.00	0.00	0	0.00	0	0	0
295	744	0.48	1.42	0.00	0.00	0.00	0	0.00	0	0	0
296	744	0.75	1.83	0.00	0.00	0.00	0	0.00	0	0	0
297	720	0.07	0.35	0.00	0.00	0.00	0	0.00	0	0	0
298	744	0.05	0.43	0.00	0.00	0.00	0	0.00	0	0	0
299	720	0.01	0.20	0.00	0.00	0.00	0	0.00	0	0	0
300	744	2.43	0.57	3.27	23.77	7.00	3058	151.33	70031	240	5900
301	744	2.35	0.37	2.67	41.51	29.00	12669	162.28	74506	929	5900
302	672	2.44	0.49	3.95	44.01	40.00	15499	172.58	73664	1183	5900
303	744	0.05	0.09	0.00	2.52	0.00	0	11.15	5049	0	2490
304	720	0.04	1.63	0.00	0.00	0.00	0	0.00	0	0	0
305	744	0.12	1.23	0.00	0.44	0.00	0	0.00	0	0	0
306	720	0.56	2.81	0.00	11.35	0.00	0	11.49	4607	0	3631
307	744	0.74	2.80	0.00	9.88	0.00	0	0.00	0	0	0
308	744	1.23	2.09	0.00	0.00	0.00	0	0.00	0	0	0
309	720	0.34	1.63	9.01	0.00	0.00	0	46.15	19797	0	4496
310	744	0.05	0.44	0.00	0.00	0.00	0	0.00	0	0	0
311	720	0.46	0.40	0.00	2.59	0.00	0	28.13	12148	0	3318
312	744	0.00	0.15	0.00	0.00	0.00	0	0.00	0	0	0
313	744	0.00	0.08	0.00	0.00	0.00	0	0.00	0	0	0
314	696	0.00	0.06	0.00	0.00	0.00	0	0.00	0	0	0
315	744	0.01	0.09	0.00	0.00	0.00	0	0.00	0	0	0
316	720	0.17	1.98	0.55	0.00	0.00	0	0.00	0	0	0
317	744	0.80	2.20	0.00	0.45	0.00	0	0.00	0	0	0
318	720	0.56	2.51	0.00	5.94	0.00	0	0.00	0	0	0
319	744	0.66	1.45	0.00	0.00	0.00	0	0.00	0	0	0
320	744	1.10	1.90	0.00	0.00	0.00	0	0.00	0	0	0
321	720	0.11	0.36	0.00	0.00	0.00	0	0.00	0	0	0
322	744	0.08	0.44	0.00	0.00	0.00	0	0.00	0	0	0
323	720	0.01	0.28	0.00	0.00	0.00	0	0.00	0	0	0
324	744	0.00	0.29	0.00	2.04	0.00	0	0.00	0	0	0
325	744	2.12	0.25	2.02	34.58	9.00	3952	157.91	71608	298	5900
326	672	2.44	0.47	3.81	44.01	41.00	15731	167.78	70659	1235	5900
327	744	2.22	0.07	0.00	2.52	0.00	0	98.16	46553	0	5425
328	720	0.07	1.88	0.00	0.00	0.00	0	0.00	0	0	0
329	744	0.72	1.76	0.00	0.00	0.00	0	0.00	0	0	0
330	720	0.72	1.57	0.00	0.00	0.00	0	0.00	0	0	0
331	744	0.70	1.35	0.00	0.00	0.00	0	0.00	0	0	0
332	744	0.55	1.12	0.00	0.00	0.00	0	0.00	0	0	0
333	720	0.30	0.56	0.00	0.00	0.00	0	0.00	0	0	0
334	744	0.07	0.70	0.00	0.00	0.00	0	0.00	0	0	0
335	720	0.01	0.51	0.00	0.00	0.00	0	0.00	0	0	0
336	744	0.00	0.16	0.00	0.00	0.00	0	0.00	0	0	0
337	744	2.44	0.34	2.40	15.21	0.00	0	134.73	63240	0	5900
338	672	2.09	0.25	1.68	33.70	0.00	0	160.16	67438	0	5900
339	744	2.28	1.67	16.46	37.23	88.00	38029	171.22	78474	2642	5900
340	720	0.23	1.97	0.00	0.00	0.00	0	0.00	0	0	0
341	744	0.18	2.20	0.00	0.00	0.00	0	0.00	0	0	0
342	720	0.20	1.62	0.00	21.74	0.00	0	0.00	0	0	0
343	744	0.22	1.47	0.00	20.87	0.00	0	0.00	0	0	0
344	744	0.17	0.83	0.00	0.16	0.00	0	0.00	0	0	0
345	720	0.07	0.28	0.00	0.00	0.00	0	0.00	0	0	0
346	744	0.02	0.42	0.00	0.00	0.00	0	0.00	0	0	0
347	720	0.01	0.20	0.00	0.00	0.00	0	0.00	0	0	0
348	744	0.00	0.15	0.00	0.00	0.00	0	0.00	0	0	0
349	744	2.20	0.22	1.36	36.01	5.00	2152	155.47	72959	165	5900
350	672	0.55	0.06	0.00	2.80	0.00	0	29.63	12640	0	3312
351	744	2.44	0.48	3.54	5.95	0.00	0	129.66	59419	0	5900
352	720	0.08	1.51	0.00	0.00	0.00	0	0.00	0	0	0
353	744	0.26	1.10	0.00	0.00	0.00	0	0.00	0	0	0
354	720	0.39	1.81	0.00	0.00	0.00	0	0.00	0	0	0
355	744	0.43	1.39	0.00	0.00	0.00	0	0.00	0	0	0
356	744	0.72	1.48	0.00	0.00	0.00	0	0.00	0	0	0
357	720	0.07	0.33	0.00	0.00	0.00	0	0.00	0	0	0
358	744	0.06	0.43	0.00	0.00	0.00	0	0.00	0	0	0
359	720	0.01	0.26	0.00	0.00	0.00	0	0.00	0	0	0
360	744	2.13	1.35	11.80	32.29	43.00	18665	125.96	56310	1763	5900

Table C2- NODOS Project, Power Operations, "Optimized", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period										
		Optimized Generation (except Sac River)										
		Optimized Genration, MW										
		Sites					TRR					
Plant Capacity, MW		123.00					9.33					
Plant Capacity, cfs		MaxQ=5100 cfs					MaxQ=1500 cfs					
Month	# of Hours	On-Peak, MW	On-Peak, MWh	Off-Peak, MW	On-Peak, cfs	Off-Peak, cfs	On-Peak	On-Peak, MWh	Off-Peak	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
1	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
2	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
3	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
4	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
5	744	26.47	9818	0.00	1141	0	0.81	300	0.00	0	116	0
6	720	114.95	39777	0.00	5100	0	9.18	3820	4.41	1341	1500	650
7	744	0.00	0	0.00	0	0	9.18	3967	4.17	1301	1500	613
8	744	30.10	9261	0.00	1366	0	1.44	443	0.00	0	207	0
9	720	107.43	28368	0.00	5009	0	4.07	1074	0.00	0	597	0
10	744	37.38	8916	0.00	1771	0	0.49	117	0.00	0	70	0
11	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
12	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
13	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
14	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
15	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
16	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
17	744	0.00	0	0.00	0	0	0.12	36	0.00	0	17	0
18	720	11.70	3508	0.00	503	0	2.99	896	0.00	0	435	0
19	744	36.38	10349	0.00	1579	0	3.13	890	0.00	0	455	0
20	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
21	720	73.73	16890	0.00	3217	0	5.19	1188	0.00	0	772	0
22	744	42.77	10242	0.00	1886	0	7.19	1722	0.00	0	1108	0
23	720	113.26	23951	0.00	5100	0	5.57	1071	0.00	0	833	0
24	744	24.86	4980	0.00	1128	0	2.63	526	0.00	0	381	0
25	744	0.00	0	0.00	0	0	0.15	32	0.00	0	21	0
26	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
27	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
28	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
29	744	0.00	0	0.00	0	0	0.72	228	0.00	0	104	0
30	720	55.68	15888	0.00	2412	0	9.18	3820	0.51	154	1500	73
31	744	114.37	33872	0.00	5100	0	9.18	3820	4.13	1355	1500	607
32	744	0.00	0	0.00	0	0	0.23	58	0.00	0	32	0
33	720	112.59	27407	0.00	5100	0	5.20	1193	0.00	0	773	0
34	744	47.37	10873	0.00	2179	0	7.33	1683	0.00	0	1133	0
35	720	108.36	22980	0.00	5100	0	5.82	1100	0.00	0	873	0
36	744	44.75	8756	0.00	2133	0	3.95	772	0.00	0	579	0
37	744	0.00	0	0.00	0	0	0.22	45	0.00	0	32	0
38	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
39	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
40	720	59.31	15142	0.00	2748	0	0.01	2	0.00	0	1	0
41	744	76.05	23901	0.00	3604	0	1.20	378	0.00	0	173	0
42	720	103.82	30822	0.00	5100	0	9.18	3673	4.46	1428	1500	657
43	744	98.69	35142	0.00	5100	0	9.18	3967	4.40	1373	1500	648
44	744	35.70	8912	0.00	1906	0	1.28	321	0.00	0	185	0
45	720	34.10	8196	0.00	1847	0	0.15	37	0.00	0	22	0
46	744	57.88	13884	0.00	3205	0	0.22	52	0.00	0	31	0
47	720	43.29	8585	0.00	2441	0	0.19	38	0.00	0	27	0
48	744	83.43	16702	0.00	4838	0	0.17	34	0.00	0	25	0
49	744	0.00	0	0.00	0	0	0.01	2	0.00	0	2	0
50	672	84.60	14199	0.00	5100	0	0.10	15	0.00	0	15	0
51	744	81.09	16769	0.00	5100	0	1.58	287	0.00	0	229	0
52	720	75.45	22665	0.00	5100	0	9.18	3820	3.57	1085	1500	522
53	744	68.61	17346	0.00	5078	0	9.18	3640	0.00	0	1500	0
54	720	60.69	19927	0.00	5100	0	9.18	3673	4.75	1519	1500	702
55	744	26.07	7296	0.00	2520	0	9.18	3072	0.00	0	1500	0
56	744	0.00	0	0.00	0	0	0.80	194	0.00	0	115	0
57	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
58	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
59	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
60	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
61	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
62	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
63	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
64	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
65	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
66	720	0.00	0	0.00	0	0	9.18	3820	4.26	1295	1500	626
67	744	0.00	0	0.00	0	0	9.18	3967	4.17	1301	1500	613
68	744	33.53	8541	0.00	1588	0	1.77	450	0.00	0	255	0
69	720	104.80	25858	0.00	5100	0	4.25	997	0.00	0	624	0
70	744	97.44	20764	0.00	4885	0	0.49	105	0.00	0	71	0
71	720	98.93	19752	0.00	5100	0	0.20	38	0.00	0	28	0
72	744	39.29	7697	0.00	2053	0	0.17	34	0.00	0	25	0
73	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
74	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
75	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
76	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
77	744	0.00	0	0.00	0	0	1.11	295	0.00	0	160	0
78	720	116.08	33681	0.00	5100	0	9.18	3820	4.41	1341	1500	650
79	744	12.71	3456	0.00	566	0	9.18	3820	5.09	1671	1500	757
80	744	92.42	23688	0.00	4189	0	9.18	3510	0.00	0	1500	0
81	720	105.93	24806	0.00	4940	0	5.46	1278	0.00	0	815	0
82	744	43.98	9470	0.00	2080	0	7.60	1636	0.00	0	1182	0
83	720	61.83	12134	0.00	2960	0	4.36	856	0.00	0	642	0
84	744	40.16	7744	0.00	1940	0	0.34	65	0.00	0	48	0
85	744	0.00	0	0.00	0	0	0.01	1	0.00	0	1	0
86	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
87	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
88	720	0.00	0	0.00	0	0	0.07	14	0.00	0	10	0
89	744	36.08	9464	0.00	1554	0	1.96	513	0.00	0	283	0
90	720	87.47	23404	0.00	3838	0	9.18	3820	3.89	1183	1500	570

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period										
		Optimized Generation (except Sac River)										
		Optimized Genration, MW										
		Sites					TRR					
Plant Capacity, MW		123.00					9.33					
Plant Capacity, cfs		MaxQ=5100 cfs					MaxQ=1500 cfs					
Month	# of Hours	On-Peak, MW	On-Peak, MWh	Off-Peak, MW	On-Peak, cfs	Off-Peak, cfs	On-Peak	On-Peak, MWh	Off-Peak	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
91	744	83.15	22736	0.00	3733	0	9.18	3820	0.92	303	1500	133
92	744	40.92	10549	0.00	1864	0	1.26	324	0.00	0	181	0
93	720	109.03	27268	0.00	5100	0	5.24	1204	0.00	0	779	0
94	744	105.44	27309	0.00	5100	0	7.91	1762	0.00	0	1241	0
95	720	102.03	22247	0.00	5100	0	5.44	1084	0.00	0	811	0
96	744	0.00	0	0.00	0	0	0.36	67	0.00	0	51	0
97	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
98	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
99	744	0.00	0	0.00	0	0	0.18	33	0.00	0	25	0
100	720	0.00	0	0.00	0	0	2.19	476	0.00	0	317	0
101	744	99.28	25998	0.00	4321	0	1.43	375	0.00	0	206	0
102	720	112.81	40225	0.00	5100	0	9.18	3820	4.26	1295	1500	627
103	744	18.14	5165	0.00	838	0	9.18	3820	5.33	1749	1500	794
104	744	106.72	36952	0.00	5100	0	9.18	3964	0.00	0	1500	0
105	720	80.02	18565	0.00	3965	0	1.36	316	0.00	0	196	0
106	744	0.00	0	0.00	0	0	0.01	2	0.00	0	1	0
107	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
108	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
109	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
110	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
111	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
112	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
113	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
114	720	0.00	0	0.00	0	0	0.00	1	0.00	0	1	0
115	744	29.13	8322	0.00	1255	0	0.07	19	0.00	0	9	0
116	744	35.99	9057	0.00	1565	0	0.35	88	0.00	0	50	0
117	720	34.68	8364	0.00	1523	0	3.72	898	0.00	0	544	0
118	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
119	720	22.52	4280	0.00	967	0	3.20	608	0.00	0	466	0
120	744	0.00	0	0.00	0	0	0.22	43	0.00	0	31	0
121	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
122	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
123	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
124	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
125	744	0.00	0	0.00	0	0	0.00	1	0.00	0	1	0
126	720	0.00	0	0.00	0	0	0.05	14	0.00	0	7	0
127	744	0.00	0	0.00	0	0	0.01	2	0.00	0	1	0
128	744	30.78	7768	0.00	1328	0	0.09	24	0.00	0	13	0
129	720	0.00	0	0.00	0	0	0.31	73	0.00	0	44	0
130	744	36.97	8095	0.00	1590	0	7.49	1639	0.00	0	1161	0
131	720	0.00	0	0.00	0	0	0.74	146	0.00	0	107	0
132	744	0.00	0	0.00	0	0	2.27	451	0.00	0	329	0
133	744	0.00	0	0.00	0	0	0.13	24	0.00	0	19	0
134	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
135	744	0.00	0	0.00	0	0	0.24	47	0.00	0	35	0
136	720	42.00	8550	0.00	1806	0	4.05	825	0.00	0	595	0
137	744	35.37	8860	0.00	1533	0	1.43	358	0.00	0	206	0
138	720	114.97	31383	0.00	5100	0	9.18	3820	4.41	1341	1500	650
139	744	110.08	43424	0.00	5100	0	9.18	3967	4.42	1380	1500	651
140	744	105.18	28286	0.00	5100	0	6.15	1624	0.00	0	928	0
141	720	101.49	26228	0.00	5100	0	4.95	1201	0.00	0	734	0
142	744	97.90	22678	0.00	5100	0	7.20	1599	0.00	0	1109	0
143	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
144	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
145	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
146	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
147	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
148	720	115.33	22648	0.00	5100	0	0.01	2	0.00	0	1	0
149	744	102.85	25725	0.00	4649	0	0.95	237	0.00	0	137	0
150	720	108.36	40709	0.00	5100	0	9.18	3820	4.60	1400	1500	680
151	744	102.07	39357	0.00	5100	0	9.18	3820	4.53	1486	1500	668
152	744	84.45	22642	0.00	4429	0	1.38	369	0.00	0	198	0
153	720	78.32	19242	0.00	4249	0	0.15	37	0.00	0	22	0
154	744	40.20	8887	0.00	2228	0	0.23	52	0.00	0	34	0
155	720	43.23	8471	0.00	2433	0	0.18	36	0.00	0	26	0
156	744	0.00	0	0.00	0	0	0.01	2	0.00	0	1	0
157	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
158	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
159	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
160	720	0.00	0	0.00	0	0	0.04	8	0.00	0	6	0
161	744	31.99	8081	0.00	1389	0	3.81	962	0.00	0	557	0
162	720	16.58	4298	0.00	724	0	9.18	3820	4.52	1375	1500	667
163	744	113.17	41701	0.00	5100	0	9.18	3820	4.67	1532	1500	690
164	744	73.98	19663	0.00	3446	0	1.44	382	0.00	0	207	0
165	720	105.13	24772	0.00	5039	0	4.10	966	0.00	0	602	0
166	744	41.50	9651	0.00	2020	0	0.51	119	0.00	0	73	0
167	720	101.83	20423	0.00	5071	0	0.39	77	0.00	0	55	0
168	744	41.48	8087	0.00	2093	0	3.40	663	0.00	0	496	0
169	744	0.00	0	0.00	0	0	0.22	42	0.00	0	31	0
170	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
171	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
172	720	115.39	22937	0.00	5091	0	0.01	2	0.00	0	1	0
173	744	93.27	23388	0.00	4201	0	1.39	349	0.00	0	201	0
174	720	16.68	4325	0.00	759	0	9.18	3673	4.01	1282	1500	587
175	744	109.02	34042	0.00	5100	0	9.18	2851	0.00	0	1500	0
176	744	91.68	23640	0.00	4438	0	0.55	141	0.00	0	79	0
177	720	87.43	21680	0.00	4355	0	0.01	2	0.00	0	1	0
178	744	92.81	21708	0.00	4767	0	0.00	0	0.00	0	0	0
179	720	96.32	19354	0.00	5100	0	0.00	0	0.00	0	0	0
180	744	42.40	8678	0.00	2282	0	0.00	0	0.00	0	0	0

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period										
		Optimized Generation (except Sac River)										
		Optimized Genration, MW										
		Sites					TRR					
Plant Capacity, MW		123.00					9.33					
Plant Capacity, cfs		MaxQ=5100 cfs					MaxQ=1500 cfs					
Month	# of Hours	On-Peak, MW	On-Peak, MWh	Off-Peak, MW	On-Peak, cfs	Off-Peak, cfs	On-Peak	On-Peak, MWh	Off-Peak	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
181	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
182	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
183	744	100.32	19619	0.00	5100	0	1.26	225	0.00	0	181	0
184	720	96.97	23261	0.00	5100	0	9.18	3758	0.00	0	1500	0
185	744	93.13	23270	0.00	5100	0	9.18	3873	0.00	0	1500	0
186	720	88.48	26857	0.00	5100	0	9.18	3673	0.95	303	1500	136
187	744	66.82	18909	0.00	4062	0	0.82	233	0.00	0	118	0
188	744	67.84	17461	0.00	4336	0	0.00	0	0.00	0	0	0
189	720	64.94	15999	0.00	4385	0	0.00	0	0.00	0	0	0
190	744	64.71	14914	0.00	4653	0	0.00	0	0.00	0	0	0
191	720	29.84	5754	0.00	2237	0	0.00	0	0.00	0	0	0
192	744	23.80	4832	0.00	1828	0	0.00	0	0.00	0	0	0
193	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
194	672	62.34	10530	0.00	5100	0	0.00	0	0.00	0	0	0
195	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
196	720	0.00	0	0.00	0	0	1.09	210	0.00	0	157	0
197	744	76.82	22376	0.00	5100	0	9.18	3820	0.14	47	1500	20
198	720	57.92	15592	0.00	4155	0	1.02	273	0.00	0	146	0
199	744	50.86	14430	0.00	3934	0	0.00	0	0.00	0	0	0
200	744	49.13	12700	0.00	4184	0	0.00	0	0.00	0	0	0
201	720	18.46	4611	0.00	1700	0	0.00	0	0.00	0	0	0
202	744	19.15	4294	0.00	1862	0	0.00	0	0.00	0	0	0
203	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
204	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
205	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
206	672	33.15	5700	0.00	2584	0	0.00	0	0.00	0	0	0
207	744	0.00	0	0.00	0	0	1.19	224	0.00	0	171	0
208	720	60.15	12885	0.00	5100	0	9.18	3623	0.00	0	1500	0
209	744	18.31	4650	0.00	1683	0	2.26	575	0.00	0	328	0
210	720	0.00	0	0.00	0	0	9.18	3820	3.49	1062	1500	510
211	744	7.76	2125	0.00	747	0	1.08	295	0.00	0	155	0
212	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
213	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
214	744	10.53	2361	0.00	1019	0	0.00	0	0.00	0	0	0
215	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
216	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
217	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
218	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
219	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
220	720	0.00	0	0.00	0	0	9.18	3187	0.00	0	1500	0
221	744	0.00	0	0.00	0	0	9.18	3833	0.00	0	1500	0
222	720	0.00	0	0.00	0	0	9.18	3820	4.50	1369	1500	664
223	744	0.00	0	0.00	0	0	9.18	3820	3.37	1104	1500	491
224	744	52.16	14166	0.00	3726	0	1.18	319	0.00	0	169	0
225	720	25.89	6264	0.00	1937	0	0.00	0	0.00	0	0	0
226	744	58.30	13450	0.00	4648	0	0.00	0	0.00	0	0	0
227	720	57.96	11828	0.00	5100	0	0.00	0	0.00	0	0	0
228	744	22.39	4505	0.00	2132	0	0.00	0	0.00	0	0	0
229	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
230	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
231	744	0.00	0	0.00	0	0	1.29	234	0.00	0	185	0
232	720	34.73	6786	0.00	2264	0	9.18	3241	0.00	0	1500	0
233	744	52.31	13170	0.00	3539	0	7.35	1852	0.00	0	1137	0
234	720	0.00	0	0.00	0	0	9.18	3820	3.34	1015	1500	487
235	744	0.00	0	0.00	0	0	9.18	3820	3.57	1171	1500	522
236	744	54.83	14690	0.00	3978	0	0.80	215	0.00	0	115	0
237	720	57.85	13805	0.00	4540	0	0.00	0	0.00	0	0	0
238	744	55.02	12624	0.00	4750	0	0.00	0	0.00	0	0	0
239	720	28.27	5799	0.00	2670	0	0.00	0	0.00	0	0	0
240	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
241	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
242	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
243	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
244	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
245	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
246	720	0.00	0	0.00	0	0	1.04	268	0.00	0	150	0
247	744	0.00	0	0.00	0	0	9.18	3967	3.36	1048	1500	490
248	744	29.45	7625	0.00	1410	0	1.24	321	0.00	0	178	0
249	720	34.74	8655	0.00	1681	0	0.15	37	0.00	0	21	0
250	744	89.04	20474	0.00	4405	0	0.22	52	0.00	0	32	0
251	720	99.90	19911	0.00	5085	0	0.18	36	0.00	0	26	0
252	744	0.00	0	0.00	0	0	0.01	2	0.00	0	2	0
253	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
254	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
255	744	37.91	7301	0.00	1783	0	1.27	245	0.00	0	183	0
256	720	0.00	0	0.00	0	0	9.18	3820	1.11	336	1500	159
257	744	0.00	0	0.00	0	0	9.18	3485	0.00	0	1500	0
258	720	104.33	36480	0.00	5100	0	9.18	3673	4.94	1581	1500	732
259	744	98.74	32606	0.00	5100	0	9.18	3967	1.58	492	1500	227
260	744	94.07	25323	0.00	5100	0	7.51	1957	0.00	0	1166	0
261	720	74.53	18711	0.00	4198	0	0.45	114	0.00	0	65	0
262	744	81.87	18474	0.00	4797	0	0.00	0	0.00	0	0	0
263	720	46.93	9605	0.00	2827	0	0.00	0	0.00	0	0	0
264	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
265	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
266	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
267	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
268	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
269	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
270	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period										
		Optimized Generation (except Sac River)										
		Optimized Genration, MW										
		Sites					TRR					
Plant Capacity, MW		123.00					9.33					
Plant Capacity, cfs		MaxQ=5100 cfs					MaxQ=1500 cfs					
Month	# of Hours	On-Peak, MW	On-Peak, MWh	Off-Peak, MW	On-Peak, cfs	Off-Peak, cfs	On-Peak	On-Peak, MWh	Off-Peak	Off-Peak, MWh	On-Peak, cfs	Off-Peak, cfs
271	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
272	744	0.00	0	0.00	0	0	0.01	2	0.00	0	1	0
273	720	39.49	9833	0.00	1699	0	0.51	126	0.00	0	73	0
274	744	115.77	29580	0.00	5100	0	7.53	1681	0.00	0	1168	0
275	720	112.68	25157	0.00	5100	0	5.51	1138	0.00	0	823	0
276	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
277	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
278	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
279	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
280	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
281	744	0.00	0	0.00	0	0	0.04	10	0.00	0	6	0
282	720	0.00	0	0.00	0	0	2.14	566	0.00	0	309	0
283	744	114.00	31223	0.00	4997	0	9.18	3820	3.87	1271	1500	567
284	744	41.12	11119	0.00	1832	0	7.08	1915	0.00	0	1088	0
285	720	111.58	29405	0.00	5100	0	5.22	1292	0.00	0	776	0
286	744	108.05	27368	0.00	5100	0	7.61	1690	0.00	0	1185	0
287	720	104.87	23057	0.00	5100	0	4.52	940	0.00	0	667	0
288	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
289	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
290	672	44.93	7777	0.00	1930	0	0.00	0	0.00	0	0	0
291	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
292	720	0.00	0	0.00	0	0	0.07	14	0.00	0	10	0
293	744	39.25	9773	0.00	1688	0	1.54	383	0.00	0	222	0
294	720	115.88	30744	0.00	5100	0	9.18	2951	0.00	0	1500	0
295	744	111.21	41959	0.00	5100	0	9.18	3820	4.17	1369	1500	613
296	744	71.02	19229	0.00	3373	0	2.50	677	0.00	0	363	0
297	720	104.21	25922	0.00	5100	0	4.71	1125	0.00	0	697	0
298	744	100.48	26170	0.00	5100	0	7.51	1739	0.00	0	1165	0
299	720	97.04	20826	0.00	5100	0	3.19	666	0.00	0	465	0
300	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
301	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
302	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
303	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
304	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
305	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
306	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
307	744	0.00	0	0.00	0	0	0.00	1	0.00	0	1	0
308	744	30.56	7977	0.00	1318	0	0.09	24	0.00	0	13	0
309	720	0.00	0	0.00	0	0	0.43	107	0.00	0	62	0
310	744	39.67	9216	0.00	1706	0	7.02	1630	0.00	0	1077	0
311	720	0.00	0	0.00	0	0	0.69	139	0.00	0	99	0
312	744	0.00	0	0.00	0	0	3.32	688	0.00	0	484	0
313	744	0.00	0	0.00	0	0	0.18	37	0.00	0	26	0
314	696	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
315	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
316	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
317	744	0.00	0	0.00	0	0	0.25	59	0.00	0	35	0
318	720	23.25	6178	0.00	999	0	4.35	1155	0.00	0	640	0
319	744	114.72	44921	0.00	5100	0	9.18	3967	3.53	1100	1500	515
320	744	46.49	12154	0.00	2125	0	1.52	397	0.00	0	219	0
321	720	108.60	28380	0.00	5100	0	4.80	1196	0.00	0	710	0
322	744	104.95	27788	0.00	5100	0	7.52	1754	0.00	0	1168	0
323	720	101.55	21904	0.00	5100	0	4.62	935	0.00	0	681	0
324	744	0.00	0	0.00	0	0	0.29	60	0.00	0	41	0
325	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
326	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
327	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
328	720	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
329	744	0.00	0	0.00	0	0	1.42	344	0.00	0	205	0
330	720	114.02	30329	0.00	4975	0	9.18	3820	4.26	1295	1500	626
331	744	111.93	46332	0.00	5100	0	9.18	3967	5.01	1562	1500	743
332	744	106.26	33580	0.00	5100	0	9.18	3820	0.77	254	1500	112
333	720	39.50	9862	0.00	1940	0	1.04	260	0.00	0	150	0
334	744	95.91	21612	0.00	4828	0	0.23	52	0.00	0	33	0
335	720	95.91	20290	0.00	4972	0	0.36	75	0.00	0	51	0
336	744	36.55	7652	0.00	1921	0	3.49	731	0.00	0	510	0
337	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
338	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
339	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
340	720	70.99	14394	0.00	3069	0	0.01	2	0.00	0	1	0
341	744	97.37	23550	0.00	4292	0	1.24	300	0.00	0	179	0
342	720	0.00	0	0.00	0	0	9.18	3820	4.41	1341	1500	650
343	744	0.00	0	0.00	0	0	9.18	3967	5.01	1562	1500	743
344	744	110.95	37580	0.00	5100	0	9.18	3820	1.05	345	1500	151
345	720	106.59	27640	0.00	5100	0	5.13	1284	0.00	0	763	0
346	744	103.07	25765	0.00	5100	0	7.50	1696	0.00	0	1164	0
347	720	41.59	8835	0.00	2096	0	3.44	731	0.00	0	502	0
348	744	34.23	7200	0.00	1740	0	0.28	59	0.00	0	40	0
349	744	0.00	0	0.00	0	0	0.00	1	0.00	0	0	0
350	672	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0
351	744	0.00	0	0.00	0	0	1.56	313	0.00	0	226	0
352	720	111.64	23536	0.00	5100	0	9.18	3820	2.42	734	1500	350
353	744	108.17	30984	0.00	5100	0	9.18	3782	0.00	0	1500	0
354	720	103.69	33849	0.00	5100	0	9.18	3820	2.13	647	1500	308
355	744	97.74	37197	0.00	5100	0	9.18	3820	4.67	1533	1500	691
356	744	92.10	26094	0.00	5100	0	8.07	2198	0.00	0	1270	0
357	720	87.78	22203	0.00	5100	0	5.06	1220	0.00	0	752	0
358	744	83.17	21860	0.00	5100	0	7.37	1736	0.00	0	1139	0
359	720	78.59	17399	0.00	5100	0	4.14	883	0.00	0	608	0
360	744	0.00	0	0.00	0	0	0.00	0	0.00	0	0	0

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period								
		Pump Back Operations, MW								
		With Pump cycle			With Gen Cycle			Pure Pump Back		
Plant Capacity, MW		123.00			123.00			123.00		
Plant Capacity, cfs		MaxQ=5100 cfs			MaxQ=5100 cfs			MaxQ=5100 cfs		
Month	# of Hours	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs
1	744	0.00	0	0	0.00	0	0	0.00	0	0
2	672	51.61	16049	2226	0.00	0	0	0.00	0	0
3	744	0.00	0	0	0.00	0	0	118.32	35905	5100
4	720	0.00	0	0	0.00	0	0	118.34	34870	5100
5	744	0.00	0	0	91.65	33991	3959	0.00	0	0
6	720	0.00	0	0	0.00	0	0	0.00	0	0
7	744	0.00	0	0	0.00	0	0	112.55	33216	5100
8	744	0.00	0	0	82.05	25251	3734	0.00	0	0
9	720	0.00	0	0	1.96	518	91	0.00	0	0
10	744	0.00	0	0	70.16	16733	3329	0.00	0	0
11	720	0.00	0	0	0.00	0	0	0.00	0	0
12	744	117.71	26633	5100	0.00	0	0	0.00	0	0
13	744	0.00	0	0	0.00	0	0	118.39	24019	5100
14	672	0.00	0	0	0.00	0	0	118.39	17722	5100
15	744	0.00	0	0	0.00	0	0	118.39	23223	5100
16	720	0.00	0	0	0.00	0	0	118.41	27197	5100
17	744	0.00	0	0	0.00	0	0	118.34	36952	5100
18	720	0.00	0	0	106.45	31919	4597	0.00	0	0
19	744	0.00	0	0	81.00	23044	3521	0.00	0	0
20	744	117.06	30336	5100	0.00	0	0	0.00	0	0
21	720	0.00	0	0	43.21	9898	1883	0.00	0	0
22	744	0.00	0	0	72.76	17424	3214	0.00	0	0
23	720	0.00	0	0	0.00	0	0	0.00	0	0
24	744	0.00	0	0	87.23	17476	3972	0.00	0	0
25	744	0.00	0	0	0.00	0	0	111.82	24228	5100
26	696	0.00	0	0	0.00	0	0	0.00	0	0
27	744	118.37	27002	5100	0.00	0	0	0.00	0	0
28	720	0.00	0	0	0.00	0	0	118.40	30783	5100
29	744	0.00	0	0	0.00	0	0	118.24	37268	5100
30	720	0.00	0	0	62.04	17703	2688	0.00	0	0
31	744	0.00	0	0	0.00	0	0	0.00	0	0
32	744	113.64	29327	5100	0.00	0	0	0.00	0	0
33	720	0.00	0	0	0.00	0	0	0.00	0	0
34	744	0.00	0	0	63.44	14561	2921	0.00	0	0
35	720	0.00	0	0	0.00	0	0	0.00	0	0
36	744	0.00	0	0	62.19	12168	2967	0.00	0	0
37	744	0.00	0	0	0.00	0	0	106.12	21699	5100
38	672	0.00	0	0	0.00	0	0	106.12	16857	5100
39	744	64.59	12765	3023	0.00	0	0	0.00	0	0
40	720	0.00	0	0	50.80	12968	2352	0.00	0	0
41	744	0.00	0	0	31.64	9945	1496	0.00	0	0
42	720	0.00	0	0	0.00	0	0	0.00	0	0
43	744	0.00	0	0	0.00	0	0	0.00	0	0
44	744	0.00	0	0	59.76	14918	3194	0.00	0	0
45	720	0.00	0	0	59.96	14411	3253	0.00	0	0
46	744	0.00	0	0	34.29	8226	1895	0.00	0	0
47	720	0.00	0	0	47.15	9352	2659	0.00	0	0
48	744	0.00	0	0	4.54	909	262	0.00	0	0
49	744	0.00	0	0	0.00	0	0	86.32	16425	5100
50	672	0.00	0	0	0.00	0	0	0.00	0	0
51	744	0.00	0	0	0.00	0	0	0.00	0	0
52	720	0.00	0	0	0.00	0	0	0.00	0	0
53	744	0.00	0	0	0.30	75	22	0.00	0	0
54	720	0.00	0	0	0.00	0	0	0.00	0	0
55	744	0.00	0	0	26.69	7470	2580	0.00	0	0
56	744	0.00	0	0	0.00	0	0	51.71	12550	5100
57	720	0.00	0	0	0.00	0	0	51.80	12177	5100
58	744	0.00	0	0	0.00	0	0	51.69	11311	5100
59	720	0.00	0	0	0.00	0	0	51.71	9538	5100
60	744	29.78	5764	2614	0.00	0	0	0.00	0	0
61	744	0.00	0	0	0.00	0	0	0.00	0	0
62	672	0.00	0	0	0.00	0	0	0.00	0	0
63	744	0.00	0	0	0.00	0	0	0.00	0	0
64	720	21.65	4453	1078	0.00	0	0	0.00	0	0
65	744	62.20	15993	2967	0.00	0	0	0.00	0	0
66	720	0.00	0	0	0.00	0	0	108.19	29377	5100
67	744	0.00	0	0	0.00	0	0	107.90	29540	5100
68	744	0.00	0	0	74.02	18855	3512	0.00	0	0
69	720	0.00	0	0	0.00	0	0	0.00	0	0
70	744	0.00	0	0	4.31	918	215	0.00	0	0
71	720	0.00	0	0	0.00	0	0	0.00	0	0
72	744	0.00	0	0	58.24	11408	3047	0.00	0	0
73	744	0.00	0	0	0.00	0	0	0.00	0	0
74	696	37.40	5655	1771	0.00	0	0	0.00	0	0
75	744	0.00	0	0	0.00	0	0	0.00	0	0
76	720	117.98	26279	5100	0.00	0	0	0.00	0	0
77	744	0.00	0	0	0.00	0	0	118.26	31364	5100
78	720	0.00	0	0	0.00	0	0	0.00	0	0
79	744	0.00	0	0	101.38	27565	4534	0.00	0	0
80	744	0.00	0	0	20.16	5168	911	0.00	0	0
81	720	0.00	0	0	3.45	808	160	0.00	0	0
82	744	0.00	0	0	63.77	13731	3020	0.00	0	0
83	720	0.00	0	0	44.73	8779	2140	0.00	0	0
84	744	0.00	0	0	65.31	12594	3160	0.00	0	0
85	744	0.00	0	0	0.00	0	0	0.00	0	0
86	672	0.00	0	0	0.00	0	0	0.00	0	0
87	744	0.00	0	0	0.00	0	0	118.39	22538	5100
88	720	0.00	0	0	0.00	0	0	118.41	23979	5100
89	744	0.00	0	0	82.14	21545	3546	0.00	0	0
90	720	0.00	0	0	28.84	7715	1262	0.00	0	0

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period								
		Pump Back Operations, MW								
		With Pump cycle			With Gen Cycle			Pure Pump Back		
Plant Capacity, MW		123.00			123.00			123.00		
Plant Capacity, cfs		MaxQ=5100 cfs			MaxQ=5100 cfs			MaxQ=5100 cfs		
Month	# of Hours	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs
91	744	0.00	0	0	30.53	8348	1367	0.00	0	0
92	744	0.00	0	0	70.97	18295	3236	0.00	0	0
93	720	0.00	0	0	0.00	0	0	0.00	0	0
94	744	0.00	0	0	0.00	0	0	0.00	0	0
95	720	0.00	0	0	0.00	0	0	0.00	0	0
96	744	0.00	0	0	0.00	0	0	100.55	18718	5100
97	744	0.00	0	0	0.00	0	0	0.00	0	0
98	672	0.00	0	0	0.00	0	0	0.00	0	0
99	744	95.41	18075	4152	0.00	0	0	0.00	0	0
100	720	0.00	0	0	0.00	0	0	118.42	25780	5100
101	744	0.00	0	0	17.97	4706	779	0.00	0	0
102	720	0.00	0	0	0.00	0	0	0.00	0	0
103	744	0.00	0	0	91.90	26158	4262	0.00	0	0
104	744	0.00	0	0	0.00	0	0	0.00	0	0
105	720	0.00	0	0	22.98	5333	1135	0.00	0	0
106	744	0.00	0	0	0.00	0	0	101.46	22892	5100
107	720	0.00	0	0	0.00	0	0	101.47	20045	5100
108	744	0.00	0	0	0.00	0	0	0.00	0	0
109	744	0.00	0	0	0.00	0	0	0.00	0	0
110	672	118.01	19007	5100	0.00	0	0	0.00	0	0
111	744	0.00	0	0	0.00	0	0	118.43	21487	5100
112	720	0.00	0	0	0.00	0	0	118.45	24925	5100
113	744	0.00	0	0	0.00	0	0	118.54	29803	5100
114	720	0.00	0	0	0.00	0	0	118.54	31824	5100
115	744	0.00	0	0	89.03	25433	3845	0.00	0	0
116	744	0.00	0	0	81.13	20414	3535	0.00	0	0
117	720	0.00	0	0	81.30	19606	3577	0.00	0	0
118	744	111.02	25316	4826	0.00	0	0	0.00	0	0
119	720	0.00	0	0	96.02	18245	4133	0.00	0	0
120	744	0.00	0	0	0.00	0	0	118.39	23505	5100
121	744	0.00	0	0	0.00	0	0	118.48	22043	5100
122	696	0.00	0	0	0.00	0	0	118.48	18349	5100
123	744	0.00	0	0	0.00	0	0	118.48	22796	5100
124	720	0.00	0	0	0.00	0	0	118.49	25175	5100
125	744	0.00	0	0	0.00	0	0	118.43	30376	5100
126	720	0.00	0	0	0.00	0	0	118.26	31548	5100
127	744	0.00	0	0	0.00	0	0	118.32	33758	5100
128	744	0.00	0	0	87.19	22001	3772	0.00	0	0
129	720	118.12	28386	5100	0.00	0	0	0.00	0	0
130	744	0.00	0	0	81.45	17835	3510	0.00	0	0
131	720	118.46	23255	5100	0.00	0	0	0.00	0	0
132	744	0.00	0	0	0.00	0	0	118.53	23522	5100
133	744	0.00	0	0	0.00	0	0	118.53	22136	5100
134	672	0.00	0	0	0.00	0	0	118.53	18531	5100
135	744	0.00	0	0	0.00	0	0	118.53	22646	5100
136	720	0.00	0	0	76.49	15569	3294	0.00	0	0
137	744	0.00	0	0	82.15	20579	3567	0.00	0	0
138	720	0.00	0	0	0.00	0	0	0.00	0	0
139	744	0.00	0	0	0.00	0	0	0.00	0	0
140	744	0.00	0	0	0.00	0	0	0.00	0	0
141	720	0.00	0	0	0.00	0	0	0.00	0	0
142	744	0.00	0	0	0.00	0	0	0.00	0	0
143	720	0.00	0	0	0.00	0	0	0.00	0	0
144	744	0.00	0	0	0.00	0	0	0.00	0	0
145	744	0.00	0	0	0.00	0	0	111.76	20366	5100
146	672	93.63	14687	4185	0.00	0	0	0.00	0	0
147	744	116.47	21510	5100	0.00	0	0	0.00	0	0
148	720	0.00	0	0	0.00	0	0	0.00	0	0
149	744	0.00	0	0	10.02	2505	451	0.00	0	0
150	720	0.00	0	0	0.00	0	0	0.00	0	0
151	744	0.00	0	0	0.00	0	0	0.00	0	0
152	744	0.00	0	0	12.86	3447	671	0.00	0	0
153	720	0.00	0	0	15.76	3872	851	0.00	0	0
154	744	0.00	0	0	51.78	11447	2872	0.00	0	0
155	720	0.00	0	0	47.39	9286	2667	0.00	0	0
156	744	0.00	0	0	0.00	0	0	89.59	17327	5100
157	744	0.00	0	0	0.00	0	0	0.00	0	0
158	672	0.00	0	0	0.00	0	0	0.00	0	0
159	744	0.00	0	0	0.00	0	0	0.00	0	0
160	720	116.91	23091	5100	0.00	0	0	0.00	0	0
161	744	0.00	0	0	85.31	21551	3711	0.00	0	0
162	720	0.00	0	0	99.92	25898	4376	0.00	0	0
163	744	0.00	0	0	0.00	0	0	0.00	0	0
164	744	0.00	0	0	35.56	9452	1654	0.00	0	0
165	720	0.00	0	0	1.28	302	61	0.00	0	0
166	744	0.00	0	0	63.22	14701	3080	0.00	0	0
167	720	0.00	0	0	0.59	117	29	0.00	0	0
168	744	0.00	0	0	59.55	11609	3007	0.00	0	0
169	744	101.06	19436	5100	0.00	0	0	0.00	0	0
170	696	0.00	0	0	0.00	0	0	0.00	0	0
171	744	0.00	0	0	0.00	0	0	0.00	0	0
172	720	0.00	0	0	0.21	43	9	0.00	0	0
173	744	0.00	0	0	20.02	5019	899	0.00	0	0
174	720	0.00	0	0	95.12	24662	4341	0.00	0	0
175	744	0.00	0	0	0.00	0	0	0.00	0	0
176	744	0.00	0	0	13.74	3542	662	0.00	0	0
177	720	0.00	0	0	15.01	3723	745	0.00	0	0
178	744	0.00	0	0	6.52	1525	333	0.00	0	0
179	720	0.00	0	0	0.00	0	0	0.00	0	0
180	744	0.00	0	0	52.33	10708	2818	0.00	0	0

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period								
		Pump Back Operations, MW								
		With Pump cycle			With Gen Cycle			Pure Pump Back		
Plant Capacity, MW		123.00			123.00			123.00		
Plant Capacity, cfs		MaxQ=5100 cfs			MaxQ=5100 cfs			MaxQ=5100 cfs		
Month	# of Hours	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs
181	744	0.00	0	0	0.00	0	0	0.00	0	0
182	672	0.00	0	0	0.00	0	0	101.85	16660	5100
183	744	0.00	0	0	0.00	0	0	0.00	0	0
184	720	0.00	0	0	0.00	0	0	0.00	0	0
185	744	0.00	0	0	0.00	0	0	0.00	0	0
186	720	0.00	0	0	0.00	0	0	0.00	0	0
187	744	0.00	0	0	17.15	4852	1038	0.00	0	0
188	744	0.00	0	0	12.02	3094	764	0.00	0	0
189	720	0.00	0	0	10.65	2625	715	0.00	0	0
190	744	0.00	0	0	6.26	1442	447	0.00	0	0
191	720	0.00	0	0	38.14	7357	2863	0.00	0	0
192	744	0.00	0	0	42.50	8628	3272	0.00	0	0
193	744	0.00	0	0	0.00	0	0	65.02	12235	5100
194	672	0.00	0	0	0.00	0	0	0.00	0	0
195	744	0.00	0	0	0.00	0	0	0.00	0	0
196	720	79.25	15231	5100	0.00	0	0	0.00	0	0
197	744	0.00	0	0	0.00	0	0	0.00	0	0
198	720	0.00	0	0	13.25	3567	945	0.00	0	0
199	744	0.00	0	0	15.15	4297	1166	0.00	0	0
200	744	0.00	0	0	10.82	2797	916	0.00	0	0
201	720	0.00	0	0	36.78	9188	3400	0.00	0	0
202	744	0.00	0	0	33.21	7445	3238	0.00	0	0
203	720	0.00	0	0	0.00	0	0	51.30	10368	5100
204	744	0.00	0	0	0.00	0	0	51.40	10365	5100
205	744	17.27	3270	1464	0.00	0	0	0.00	0	0
206	672	0.00	0	0	32.27	5549	2516	0.00	0	0
207	744	0.00	0	0	0.00	0	0	63.68	11979	5100
208	720	0.00	0	0	0.00	0	0	0.00	0	0
209	744	0.00	0	0	37.06	9412	3417	0.00	0	0
210	720	0.00	0	0	0.00	0	0	53.44	14280	5100
211	744	0.00	0	0	44.83	12279	4353	0.00	0	0
212	744	0.00	0	0	0.00	0	0	52.33	14072	5100
213	720	0.00	0	0	0.00	0	0	53.12	13251	5100
214	744	0.00	0	0	41.90	9398	4081	0.00	0	0
215	720	0.00	0	0	0.00	0	0	51.31	10505	5100
216	744	0.00	0	0	0.00	0	0	51.40	9908	5100
217	744	0.00	0	0	0.00	0	0	51.47	10392	5100
218	696	0.00	0	0	0.00	0	0	51.47	8596	5100
219	744	0.00	0	0	0.00	0	0	0.00	0	0
220	720	0.00	0	0	0.00	0	0	74.29	13652	5100
221	744	0.00	0	0	0.00	0	0	74.22	18465	5100
222	720	0.00	0	0	0.00	0	0	74.05	19938	5100
223	744	0.00	0	0	0.00	0	0	73.82	20281	5100
224	744	0.00	0	0	19.31	5244	1374	0.00	0	0
225	720	0.00	0	0	42.18	10205	3163	0.00	0	0
226	744	0.00	0	0	5.72	1319	452	0.00	0	0
227	720	0.00	0	0	0.00	0	0	0.00	0	0
228	744	0.00	0	0	31.12	6263	2968	0.00	0	0
229	744	0.00	0	0	0.00	0	0	51.68	10410	5100
230	672	25.24	4430	2178	0.00	0	0	0.00	0	0
231	744	0.00	0	0	0.00	0	0	0.00	0	0
232	720	0.00	0	0	43.48	8496	2836	0.00	0	0
233	744	0.00	0	0	23.14	5827	1561	0.00	0	0
234	720	0.00	0	0	0.00	0	0	73.15	18731	5100
235	744	0.00	0	0	0.00	0	0	72.86	20686	5100
236	744	0.00	0	0	15.54	4163	1122	0.00	0	0
237	720	0.00	0	0	7.19	1715	560	0.00	0	0
238	744	0.00	0	0	4.08	937	350	0.00	0	0
239	720	0.00	0	0	25.75	5282	2430	0.00	0	0
240	744	54.87	10762	5100	0.00	0	0	0.00	0	0
241	744	18.22	3630	1457	0.00	0	0	0.00	0	0
242	672	9.33	1571	641	0.00	0	0	0.00	0	0
243	744	0.00	0	0	0.00	0	0	0.00	0	0
244	720	61.66	12334	3363	0.00	0	0	0.00	0	0
245	744	42.02	10327	2171	0.00	0	0	0.00	0	0
246	720	0.00	0	0	0.00	0	0	0.00	0	0
247	744	0.00	0	0	0.00	0	0	106.74	30403	5100
248	744	0.00	0	0	76.89	19906	3690	0.00	0	0
249	720	0.00	0	0	70.51	17567	3419	0.00	0	0
250	744	0.00	0	0	14.12	3246	695	0.00	0	0
251	720	0.00	0	0	0.29	57	15	0.00	0	0
252	744	100.32	20345	5100	0.00	0	0	0.00	0	0
253	744	0.00	0	0	0.00	0	0	100.75	20962	5100
254	672	0.00	0	0	0.00	0	0	0.00	0	0
255	744	0.00	0	0	70.43	13562	3317	0.00	0	0
256	720	0.00	0	0	0.00	0	0	107.50	21604	5100
257	744	0.00	0	0	0.00	0	0	107.39	26099	5100
258	720	0.00	0	0	0.00	0	0	0.00	0	0
259	744	0.00	0	0	0.00	0	0	0.00	0	0
260	744	0.00	0	0	0.00	0	0	0.00	0	0
261	720	0.00	0	0	16.08	4036	902	0.00	0	0
262	744	0.00	0	0	5.21	1175	303	0.00	0	0
263	720	0.00	0	0	37.77	7731	2273	0.00	0	0
264	744	0.00	0	0	0.00	0	0	83.46	17150	5100
265	744	0.00	0	0	0.00	0	0	0.00	0	0
266	696	0.00	0	0	0.00	0	0	0.00	0	0
267	744	0.00	0	0	0.00	0	0	0.00	0	0
268	720	74.13	14680	3311	0.00	0	0	0.00	0	0
269	744	117.66	27733	5100	0.00	0	0	0.00	0	0
270	720	0.00	0	0	0.00	0	0	118.49	31685	5100

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C (Cont.)

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		NODOS Project- Alternative C -CALSIM Model Run-Median Deliveries, 30-year Planning Period								
		Pump Back Operations, MW								
		With Pump cycle			With Gen Cycle			Pure Pump Back		
Plant Capacity, MW		123.00			123.00			123.00		
Plant Capacity, cfs		MaxQ=5100 cfs			MaxQ=5100 cfs			MaxQ=5100 cfs		
Month	# of Hours	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs	On-Peak	On-Peak, MWh	PumpBack Q cfs
271	744	118.69	32591	5100	0.00	0	0	0.00	0	0
272	744	0.00	0	0	0.00	0	0	118.67	32172	5100
273	720	0.00	0	0	78.95	19656	3401	0.00	0	0
274	744	0.00	0	0	0.00	0	0	0.00	0	0
275	720	0.00	0	0	0.00	0	0	0.00	0	0
276	744	0.00	0	0	0.00	0	0	0.00	0	0
277	744	0.00	0	0	0.00	0	0	118.62	23092	5100
278	672	0.00	0	0	0.00	0	0	118.62	20383	5100
279	744	0.00	0	0	0.00	0	0	118.62	22845	5100
280	720	0.00	0	0	0.00	0	0	118.63	22549	5100
281	744	0.00	0	0	0.00	0	0	118.56	29457	5100
282	720	0.00	0	0	0.00	0	0	118.38	31368	5100
283	744	0.00	0	0	2.36	646	103	0.00	0	0
284	744	0.00	0	0	73.26	19810	3268	0.00	0	0
285	720	0.00	0	0	0.00	0	0	0.00	0	0
286	744	0.00	0	0	0.00	0	0	0.00	0	0
287	720	0.00	0	0	0.00	0	0	0.00	0	0
288	744	0.00	0	0	0.00	0	0	0.00	0	0
289	744	18.69	3804	815	0.00	0	0	0.00	0	0
290	672	0.00	0	0	73.68	12754	3170	0.00	0	0
291	744	118.60	23012	5100	0.00	0	0	0.00	0	0
292	720	0.00	0	0	0.00	0	0	118.64	22677	5100
293	744	0.00	0	0	79.21	19725	3412	0.00	0	0
294	720	0.00	0	0	0.00	0	0	0.00	0	0
295	744	0.00	0	0	0.00	0	0	0.00	0	0
296	744	0.00	0	0	36.44	9866	1727	0.00	0	0
297	720	0.00	0	0	0.00	0	0	0.00	0	0
298	744	0.00	0	0	0.00	0	0	0.00	0	0
299	720	0.00	0	0	0.00	0	0	0.00	0	0
300	744	0.00	0	0	0.00	0	0	0.00	0	0
301	744	0.00	0	0	0.00	0	0	0.00	0	0
302	672	0.00	0	0	0.00	0	0	0.00	0	0
303	744	118.56	22303	5100	0.00	0	0	0.00	0	0
304	720	0.00	0	0	0.00	0	0	118.59	23686	5100
305	744	0.00	0	0	0.00	0	0	118.51	29583	5100
306	720	118.67	30302	5100	0.00	0	0	0.00	0	0
307	744	0.00	0	0	0.00	0	0	118.41	33734	5100
308	744	0.00	0	0	87.49	22840	3782	0.00	0	0
309	720	118.20	29401	5100	0.00	0	0	0.00	0	0
310	744	0.00	0	0	78.78	18303	3394	0.00	0	0
311	720	118.28	23845	5100	0.00	0	0	0.00	0	0
312	744	0.00	0	0	0.00	0	0	118.56	24576	5100
313	744	0.00	0	0	0.00	0	0	118.51	24408	5100
314	696	0.00	0	0	0.00	0	0	118.51	20799	5100
315	744	0.00	0	0	0.00	0	0	118.51	22455	5100
316	720	0.00	0	0	0.00	0	0	118.63	23824	5100
317	744	0.00	0	0	0.00	0	0	118.54	28545	5100
318	720	0.00	0	0	95.21	25295	4101	0.00	0	0
319	744	0.00	0	0	0.00	0	0	0.00	0	0
320	744	0.00	0	0	65.03	16998	2975	0.00	0	0
321	720	0.00	0	0	0.00	0	0	0.00	0	0
322	744	0.00	0	0	0.00	0	0	0.00	0	0
323	720	0.00	0	0	0.00	0	0	0.00	0	0
324	744	0.00	0	0	0.00	0	0	100.35	20908	5100
325	744	0.00	0	0	0.00	0	0	0.00	0	0
326	672	0.00	0	0	0.00	0	0	0.00	0	0
327	744	117.26	23227	5100	0.00	0	0	0.00	0	0
328	720	0.00	0	0	0.00	0	0	118.71	23956	5100
329	744	0.00	0	0	0.00	0	0	118.60	28621	5100
330	720	0.00	0	0	2.87	764	125	0.00	0	0
331	744	0.00	0	0	0.00	0	0	0.00	0	0
332	744	0.00	0	0	0.00	0	0	0.00	0	0
333	720	0.00	0	0	64.27	16047	3160	0.00	0	0
334	744	0.00	0	0	5.44	1226	272	0.00	0	0
335	720	0.00	0	0	2.49	526	128	0.00	0	0
336	744	0.00	0	0	60.40	12644	3179	0.00	0	0
337	744	27.64	5544	1408	0.00	0	0	0.00	0	0
338	672	0.00	0	0	0.00	0	0	0.00	0	0
339	744	0.00	0	0	0.00	0	0	0.00	0	0
340	720	0.00	0	0	47.04	9537	2031	0.00	0	0
341	744	0.00	0	0	18.39	4448	808	0.00	0	0
342	720	0.00	0	0	0.00	0	0	114.08	30382	5100
343	744	0.00	0	0	0.00	0	0	113.78	31287	5100
344	744	0.00	0	0	0.00	0	0	0.00	0	0
345	720	0.00	0	0	0.00	0	0	0.00	0	0
346	744	0.00	0	0	0.00	0	0	0.00	0	0
347	720	0.00	0	0	59.57	12654	3004	0.00	0	0
348	744	0.00	0	0	65.97	13876	3360	0.00	0	0
349	744	0.00	0	0	0.00	0	0	0.00	0	0
350	672	107.78	20088	5100	0.00	0	0	0.00	0	0
351	744	65.83	13198	3012	0.00	0	0	0.00	0	0
352	720	0.00	0	0	0.00	0	0	0.00	0	0
353	744	0.00	0	0	0.00	0	0	0.00	0	0
354	720	0.00	0	0	0.00	0	0	0.00	0	0
355	744	0.00	0	0	0.00	0	0	0.00	0	0
356	744	0.00	0	0	0.00	0	0	0.00	0	0
357	720	0.00	0	0	0.00	0	0	0.00	0	0
358	744	0.00	0	0	0.00	0	0	0.00	0	0
359	720	0.00	0	0	0.00	0	0	0.00	0	0
360	744	0.00	0	0	0.00	0	0	0.00	0	0

Table C3- NODOS Project, Power Operations, "Pumpback", Alt C (Cont.)

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Appendix 31B
CVP-SWP Power Modeling

APPENDIX 31B
CVP-SWP Power Modeling

31B.1 Introduction

In order to examine the range of potential effects of NODOS operations on the electric power system in the Western US, computer modeling of CVP, SWP and NODOS power and energy use was conducted over a wide range of hydrological conditions, including multiple dry years as well as very wet years. This modeling allows and informs a preliminary analysis of the direct and indirect effects of future Project operations on power and energy use in the Primary, Secondary and Extended Study Areas.

The power analysis uses spreadsheet post-processors that evaluate the power impacts of flow scenarios from CALSIM II operations studies on a monthly time step. The following post-processor tools are used in the analysis:

- LTGen: analyzes CVP facilities
- SWP_Power: analyzes SWP facilities
- NODOS_Power: analyses existing and proposed NODOS facilities

Table 31B-1 shows pumping and power generation facilities that are included in each power analysis tool.

The tools estimate average annual energy generation and use at SWP and CVP facilities and at proposed NODOS generation and pumping facilities, including existing facilities that would be operated differently if NODOS is built. For generation facilities, the tools estimate average annual energy generation as well as average annual peaking power capacity. For pumping facilities, the tools estimate average annual energy requirements. The tools also check to determine whether off-peak energy use targets are being met. Transmission losses are estimated for both pumping and generation facilities.

Flow and storage levels used in the power analysis tool are taken from CALSIM II studies, using the results of the entire simulation period of October 1921 to September 2003.

31B.2 Summary of Results

Table 31B-2 provides a summary of predicted changes in power and energy production and use for CVP, SWP and proposed NODOS facilities for the No Action Alternative, and Alternatives A, B and C as compared to Existing Conditions. Table 31B-2 also provides a summary of predicted changes in power and energy production and use for Alternatives A, B and C as compared to the No Action Alternative.

Tables 31B-3 through 31B-5 provide detailed summaries of predicted changes power and energy production and use for each CVP, SWP and proposed NODOS facility for Existing Conditions and for the No Action Alternative and Alternatives A, B and C.

31B.3 Approach and Assumptions

31B.3.1 Computational Approach

This section documents the approach that would be used to estimate energy use, generation, peaking power capacity, and transmission losses.

31B.3.1.1 Energy Use at Pumping Facilities

Energy use at CVP and SWP pumping facilities are determined using empirical energy factors provided by the Western Area Power Authority (WAPA) for CVP facilities and by the DWR Operations Control Office (OCO) for SWP facilities. For these facilities, energy use is estimated using the following equation:

Energy Use (MWh) =

$$Energy_Factor * \mathrm{Q}\frac{ft\text{^}3}{s}$$

The approach used to estimate energy use at proposed NODOS pumping facilities assumes that pumping plant energy use is a function of flow and total head. For these facilities, energy use is estimated using the following equation:

Energy Use (MWh) =

$$0.7457\frac{kW}{hp} * 62.4\frac{lbs}{ft\text{^}3} * \frac{1MW}{1000kW} * \frac{1hp}{550\frac{lb*ft}{s}} * t\frac{hrs}{month} * \frac{1}{\eta} * \mathrm{head}(ft) * \mathrm{Q}\frac{ft\text{^}3}{s}$$

The tools also estimate whether user-defined off-peak energy use targets can be met. For example, if it is desired that 90 percent of required pumping energy use during a particular month occur during off-peak hours, the tools determine whether this is feasible given power and flow capacity limits.

31B.3.1.2 Energy Generation

Energy generation at CVP and SWP power facilities are determined using empirical energy factors provided by WAPA for CVP facilities and by the OCO for SWP facilities. For these facilities, energy use is estimated using the following equation:

Energy Generation (MWh) =

$$Energy_Factor * \mathrm{Q}\frac{ft\text{^}3}{s}$$

The approach used to estimate energy generation at proposed NODOS power facilities assumes that power plant generation is a function of flow and total head. Energy generation is estimated using the following equation:

Energy Generation (MWh) =

$$0.7457\frac{kW}{hp} * 62.4\frac{lbs}{ft\text{^}3} * \frac{1MW}{1000kW} * \frac{1hp}{550\frac{lb*ft}{s}} * t\frac{hrs}{month} * \eta * \mathrm{head}(ft) * \mathrm{Q}\frac{ft\text{^}3}{s}$$

31B.3.1.3 Average Monthly Power Capacity

Energy generation is limited on a monthly basis by an average power capacity at each facility. At any one time, power capacity can be higher or lower, depending upon reservoir levels and scheduled water releases. Power production in general will be high during summer months when reservoir levels are

higher and water is being released to meet delivery requirements, and power operations are optimized to provide the greatest benefit to taxpayers.

Average monthly power capacity for CVP facilities is estimated using empirical equations provided by WAPA. The approach used to estimate average monthly power capacity for SWP and proposed NODOS facilities assumes that peak capacity is a function of total head and average power plant flow. The average monthly power capacity is estimated using the following equation:

Power Capacity (MW) =

$$0.7457\frac{kW}{hp} * 62.4\frac{lbs}{ft\text{^}3} * \frac{1MW}{1000kW} * \frac{1hp}{550\frac{lb*ft}{s}} * \frac{1}{\eta} * \text{head}(ft) *$$

$$\text{Avg. power plant flow rate}(\frac{ft\text{^}3}{s})$$

31B.3.1.4 Transmission Losses

Transmission losses are estimated to estimate energy use and generation at load center, as a percentage of energy use or generation.

31B.3.2 Assumptions

Tables 31B-6 through 31B-8 show assumptions that are used to estimate energy use and transmission losses at CVP, SWP and proposed NODOS pumping facilities.

Table 31B-9 through 31B-11 show assumptions that are used to estimate energy generation, power capacity, and transmission losses at CVP, SWP and proposed NODOS generation facilities.

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Table 31B-1
Power and Pumping Facilities Included in the Analysis
NODOS ADEIRS and FS Alternatives
February 8, 2011

	Central Valley Project		State Water Project		Proposed NODOS Facilities	
	Pumping Facilities	**Hydropower Facilities**	**Pumping Facilities**	**Hydropower Facilities**	**Pumping Facilities**	**Hydropower Facilities**
North of Delta						
	Red Bluff Corning Tehama Other Folsom Contra Costa	Trinity Lewiston Carr Spring Creek Shasta Keswick Folsom Nimbus New Melones	none	Oroville Thermalito	Funks Sacramento River G-C Canal TRR T-C Canal Diversion G-C Canal Diversion	Funks Reservoir Sacramento River G-C Canal TRR
South of Delta						
	Jones CVP Banks O'Neill CVP San Luis San Felipe CVP Dos Amigos DMC Intertie San Luis Other DMC Other Misc	CVP San Luis O'Neill	SWP Banks SWP San Luis SWP Dos Amigos Buena Vista Teerink Chrisman Edmonston Pearblossom Oso South Bay Del Valle Las Perillas Badger Hill	SWP San Luis Alamo Mojave Devil's Canyon Warner Castaic	none	none

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Tables

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Table 31B-2
Power and Pumping Reporting Metrics - Summary of All CVP, SWP and Proposed NODOS Facilities
NODOS ADEIRS and FS Alternatives
February 8, 2011

					Comparisons to Existing Condition								
					Existing Condition	No Action Alternative	No Action Alternative minus Existing Condition	NODOS Alternative A	NODOS Alternative A minus Existing Condition	NODOS Alternative B	NODOS Alternative B minus Existing Condition	NODOS Alternative C	NODOS Alternative C minus Existing Condition
Central Valley Project (CVP) Facilities													
CVP Generation Facilities													
Capacity	Total of all Facilities at load center	(MW)	Long Term		1,646	1,647	1	1,659	13	1,660	14	1,661	15
			Dry and Critical		1,494	1,505	11	1,523	29	1,525	32	1,526	32
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		4,712	4,701	-11	4,711	-1	4,718	6	4,715	3
			Dry and Critical		3,533	3,513	-20	3,500	-34	3,506	-27	3,479	-54
CVP Pumping Facilities													
Energy Use	Total of all Facilities at load center	(GWh)	Long Term		1,124	1,116	-9	1,152	27	1,147	23	1,155	31
			Dry and Critical		894	878	-16	902	8	902	8	901	8
All CVP Facilities													
Net Generation	Total of all Facilities	(GWh)	Long Term		3,588	3,585	-2	3,560	-28	3,571	-17	3,559	-28
			Dry and Critical		2,639	2,635	-4	2,598	-41	2,604	-35	2,578	-62
State Water Project (SWP) Facilities													
SWP Generation Facilities													
Capacity	Total of all Facilities at load center	(MW)	Long Term		612	618	6	632	20	633	22	632	21
			Dry and Critical		448	439	-9	462	15	462	15	462	15
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		4,326	4,386	59	4,491	165	4,493	167	4,496	170
			Dry and Critical		3,033	2,909	-124	3,143	110	3,128	96	3,168	136
SWP Pumping Facilities													
Energy Use	Total of all Facilities at load center	(GWh)	Long Term		7,848	8,088	239	8,442	594	8,464	616	8,473	625
			Dry and Critical		6,354	6,013	-340	6,768	414	6,727	373	6,848	494
All SWP Facilities													
Net Generation	Total of all Facilities	(GWh)	Long Term		-3,522	-3,702	-180	-3,951	-429	-3,971	-449	-3,977	-455
			Dry and Critical		-3,321	-3,104	217	-3,625	-304	-3,599	-277	-3,679	-358
Proposed North of the Delta Offstream Storage (NODOS) Facilities													
NODOS Generation Facilities													
Capacity	At load center	(MW)	Long Term		0	0	0	14	14	12	12	18	18
			Dry and Critical		0	0	0	15	15	11	11	20	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		0	0	0	126	126	104	104	157	157
			Dry and Critical		0	0	0	129	129	100	100	173	173
NODOS Pumping Facilities													
Energy Use	Total of all Facilities at load center	(GWh)	Long Term		13	13	0	229	217	195	183	278	265
			Dry and Critical		11	12	0	184	172	106	95	199	188
All NODOS Facilities													
Net Generation	Total of all Facilities	(GWh)	Long Term		-13	-13	0	-103	-90	-91	-79	-121	-108
			Dry and Critical		-11	-12	0	-54	-43	-6	5	-26	-15
All Facilities (CVP, SWP and Proposed NODOS)													
Generation Facilities													
Capacity	At load center	(MW)	Long Term		2,258	2,265	7	2,306	48	2,305	47	2,311	53
			Dry and Critical		1,941	1,943	2	1,999	58	1,999	58	2,008	67
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		9,038	9,087	48	9,329	290	9,316	277	9,368	329
			Dry and Critical		6,566	6,422	-144	6,771	206	6,735	170	6,821	255
Pumping Facilities													
Energy Use	Total of all Facilities at load center	(GWh)	Long Term		8,983	9,214	231	9,818	835	9,801	818	9,901	918
			Dry and Critical		7,257	6,901	-356	7,850	592	7,732	474	7,945	687
All Facilities													
Net Generation	Total of all Facilities	(GWh)	Long Term		51	-132	-183	-499	-550	-498	-548	-543	-594
			Dry and Critical		-694	-482	212	-1,085	-391	-1,004	-310	-1,131	-437

Notes:
1. Results are estimated using LTGEN, SWP_Power and NODOS_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index
4. Net Generation for all facities does not equal sum of Net Generation for CVP, SWP and proposed NODOS facilities because energy use at Red Bluff pumping plant is included in both CVP and proposed NODOS facilities. Results for Red Bluff pumping from LTGEN are subtracted from Net Generation for all facilities to avoid double-counting.

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Table 31B-2
Power and Pumping Reporting Metrics - Summary of All CVP, SWP and Proposed NODOS Facilities
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to No Action Alternative						
				No Action Alternative	NODOS Alternative A	NODOS Alternative A minus No Action Alternative	NODOS Alternative B	NODOS Alternative B minus No Action Alternative	NODOS Alternative C	NODOS Alternative C minus No Action Alternative
Central Valley Project (CVP) Facilities										
CVP Generation Facilities										
Capacity	Total of all Facilities at load center	(MW)	Long Term	1,647	1,659	12	1,660	13	1,661	14
			Dry and Critical	1,505	1,523	18	1,525	20	1,526	21
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,701	4,711	11	4,718	18	4,715	14
			Dry and Critical	3,513	3,500	-13	3,506	-6	3,479	-34
CVP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,116	1,152	36	1,147	32	1,155	40
			Dry and Critical	878	902	24	902	25	901	24
All CVP Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	3,585	3,560	-25	3,571	-14	3,559	-26
			Dry and Critical	2,635	2,598	-37	2,604	-31	2,578	-58
State Water Project (SWP) Facilities										
SWP Generation Facilities										
Capacity	Total of all Facilities at load center	(MW)	Long Term	618	632	15	633	16	632	15
			Dry and Critical	439	462	24	462	24	462	23
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,386	4,491	105	4,493	107	4,496	110
			Dry and Critical	2,909	3,143	234	3,128	220	3,168	259
SWP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8,088	8,442	354	8,464	376	8,473	385
			Dry and Critical	6,013	6,768	755	6,727	714	6,848	834
All SWP Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	-3,702	-3,951	-249	-3,971	-269	-3,977	-275
			Dry and Critical	-3,104	-3,625	-521	-3,599	-494	-3,679	-575
Proposed North of the Delta Offstream Storage (NODOS) Facilities										
NODOS Generation Facilities										
Capacity	At load center	(MW)	Long Term	0	14	14	12	12	18	18
			Dry and Critical	0	15	15	11	11	20	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	126	126	104	104	157	157
			Dry and Critical	0	129	129	100	100	173	173
NODOS Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	13	229	216	195	182	278	265
			Dry and Critical	12	184	172	106	95	199	188
All NODOS Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	-13	-103	-90	-91	-78	-121	-108
			Dry and Critical	-12	-54	-43	-6	6	-26	-15
All Facilities (CVP, SWP and Proposed NODOS)										
Generation Facilities										
Capacity	At load center	(MW)	Long Term	2,265	2,306	41	2,305	41	2,311	46
			Dry and Critical	1,943	1,999	56	1,999	55	2,008	64
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	9,087	9,329	242	9,316	229	9,368	281
			Dry and Critical	6,422	6,771	350	6,735	313	6,821	399
Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	9,214	9,818	604	9,801	587	9,901	687
			Dry and Critical	6,901	7,850	948	7,732	830	7,945	1,043
All Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	-132	-499	-367	-498	-366	-543	-412
			Dry and Critical	-482	-1,085	-603	-1,004	-522	-1,131	-649

Notes:
1. Results are estimated using LTGEN, SWP_Power and NODOS_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-3
Power and Pumping Reporting Metrics - CVP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

					Comparisons to Existing Condition								
					Existing Condition	No Action Alternative	No Action Alternative minus Existing Condition	NODOS Alternative A	NODOS Alternative A minus Existing Condition	NODOS Alternative B	NODOS Alternative B minus Existing Condition	NODOS Alternative C	NODOS Alternative C minus Existing Condition
Central Valley Project (CVP) Facilities													
CVP Generation Facilities													
North of the Delta CVP Generation Facilities													
Trinity Reservoir Power Facility													
Capacity	At load center	(MW)	Long Term		114	114	0	116	2	116	2	116	2
			Dry and Critical		102	103	0	106	3	106	3	107	4
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		395	396	1	400	5	400	5	401	6
			Dry and Critical		293	293	0	296	3	297	4	295	2
Lewiston Power Facility													
Capacity	At load center	(MW)	Long Term		0	0	0	0	0	0	0	0	0
			Dry and Critical		0	0	0	0	0	0	0	0	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		0	0	0	0	0	0	0	0	0
			Dry and Critical		0	0	0	0	0	0	0	0	0
Carr Power Facility													
Capacity	At load center	(MW)	Long Term		145	145	0	145	0	145	0	145	0
			Dry and Critical		145	145	0	145	0	145	0	145	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		282	285	3	285	4	287	5	285	3
			Dry and Critical		287	286	-2	278	-9	280	-8	272	-15
Spring Creek Power Facility													
Capacity	At load center	(MW)	Long Term		179	179	0	178	0	178	0	178	0
			Dry and Critical		179	179	0	178	0	178	0	178	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		336	339	2	336	0	339	3	336	0
			Dry and Critical		289	286	-3	276	-13	279	-10	271	-18
Shasta Power Facility													
Capacity	At load center	(MW)	Long Term		571	571	0	578	7	579	8	580	9
			Dry and Critical		507	508	1	522	16	525	18	528	21
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		2,049	2,050	1	2,056	6	2,057	8	2,060	10
			Dry and Critical		1,518	1,517	-1	1,518	0	1,520	1	1,516	-3
Keswick Power Facility													
Capacity	At load center	(MW)	Long Term		48	48	0	48	0	48	0	48	0
			Dry and Critical		40	40	0	39	0	39	0	39	-1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		419	419	0	419	0	420	1	420	1
			Dry and Critical		346	344	-1	342	-4	341	-4	339	-6
Folsom Power Facility													
Capacity	At load center	(MW)	Long Term		170	169	-1	171	1	171	0	171	1
			Dry and Critical		156	155	-1	158	2	158	1	159	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		579	563	-16	564	-15	564	-15	564	-15
			Dry and Critical		316	304	-12	306	-10	306	-10	306	-10
Nimbus Power Facility													
Capacity	At load center	(MW)	Long Term		8	7	0	7	0	7	0	7	0
			Dry and Critical		5	5	0	5	0	5	0	5	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		68	65	-2	65	-3	65	-3	65	-3
			Dry and Critical		42	40	-2	40	-2	40	-2	40	-2
New Melones Power Facility													
Capacity	At load center	(MW)	Long Term		309	312	4	312	4	312	4	312	4
			Dry and Critical		271	277	6	277	6	277	6	277	6
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		471	473	1	473	1	473	1	473	1
			Dry and Critical		345	342	-2	342	-2	342	-2	342	-2
Total of North of the Delta CVP Generation Facilities													
Capacity	At load center	(MW)	Long Term		1,543	1,546	3	1,556	13	1,556	13	1,558	15
			Dry and Critical		1,404	1,410	6	1,430	26	1,432	28	1,437	33
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		4,600	4,590	-10	4,598	-2	4,605	5	4,603	3
			Dry and Critical		3,435	3,412	-23	3,398	-37	3,405	-30	3,381	-54
South of the Delta CVP Generation Facilities													
CVP San Luis Power Facility													
Capacity	At load center	(MW)	Long Term		102	100	-2	102	0	103	1	102	-1
			Dry and Critical		88	93	5	91	3	92	3	88	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		105	104	-2	106	1	106	1	105	0
			Dry and Critical		88	91	3	92	4	91	3	88	0
O'Neill Power Facility													
Capacity	At load center	(MW)	Long Term		1	1	0	1	0	1	0	1	0
			Dry and Critical		1	1	0	1	0	1	0	1	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		7	7	0	7	0	7	0	7	0
			Dry and Critical		10	10	0	10	0	11	1	10	0
Total of South of the Delta CVP Generation Facilities													
Capacity	At load center	(MW)	Long Term		103	101	-2	103	0	104	1	102	-1
			Dry and Critical		90	94	5	92	3	93	4	89	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		112	111	-2	113	1	113	1	112	0
			Dry and Critical		98	101	3	102	4	102	4	98	0
Total of CVP Generation Facilities													
Capacity	At load center	(MW)	Long Term		1,646	1,647	1	1,659	13	1,660	14	1,661	15
			Dry and Critical		1,494	1,505	11	1,523	29	1,525	32	1,526	32
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term		4,712	4,701	-11	4,711	-1	4,718	6	4,715	3
			Dry and Critical		3,533	3,513	-20	3,500	-34	3,506	-27	3,479	-54

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Table 31B-3
Power and Pumping Reporting Metrics - CVP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to Existing Condition								
				Existing Condition	No Action Alternative	No Action Alternative minus Existing Condition	NODOS Alternative A	NODOS Alternative A minus Existing Condition	NODOS Alternative B	NODOS Alternative B minus Existing Condition	NODOS Alternative C	NODOS Alternative C minus Existing Condition
Central Valley Project (CVP) Facilities												
CVP Pumping Facilities												
North of the Delta CVP Pumping Facilities												
Red Bluff Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	2	2	0	5	2	6	4	5	3
			Dry and Critical	1	1	0	4	2	4	2	3	2
Corning Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	4	4	0	4	0	4	0	4	0
			Dry and Critical	2	2	0	2	0	2	0	2	0
Tehama Other Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	7	7	0	16	9	22	14	17	10
			Dry and Critical	4	4	0	12	8	13	9	12	8
Folsom Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	9	14	5	14	4	14	4	14	4
			Dry and Critical	12	17	6	17	5	17	5	17	5
Contra Costa Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	21	28	6	28	6	28	6	28	6
			Dry and Critical	20	24	4	24	4	24	4	24	4
Total of North of the Delta CVP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	45	55	10	67	22	74	29	68	23
			Dry and Critical	40	49	9	59	19	60	20	59	19
South of the Delta CVP Pumping Facilities												
Jones Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	526	522	-3	536	11	536	11	540	15
			Dry and Critical	441	431	-10	440	-1	442	2	444	3
CVP Banks Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	21	18	-3	18	-2	19	-2	19	-2
			Dry and Critical	11	9	-2	9	-1	9	-2	9	-2
O'Neill Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	65	63	-2	65	-1	64	-1	64	-1
			Dry and Critical	51	49	-2	50	-1	50	0	50	-1
CVP San Luis Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	196	191	-5	200	4	199	3	198	2
			Dry and Critical	156	159	3	157	1	162	6	153	-3
San Felipe Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	36	37	1	37	1	36	1	37	1
			Dry and Critical	31	30	-1	31	0	30	-1	32	0
CVP Dos Amigos Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	103	103	0	105	2	103	-1	104	1
			Dry and Critical	61	57	-4	61	0	58	-3	60	-1
DMC Intertie Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	2	2	2	2	2	2	2	2
			Dry and Critical	0	1	1	1	1	1	1	1	1
San Luis Other Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	72	72	0	74	1	72	0	73	1
			Dry and Critical	43	40	-3	43	0	41	-2	42	-1
DMC Other Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0	1	0
			Dry and Critical	1	1	0	1	0	1	0	1	0
Misc Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	60	51	-9	48	-12	43	-17	50	-10
			Dry and Critical	61	53	-8	51	-10	48	-13	52	-9
Total of South of the Delta CVP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,080	1,060	-19	1,085	5	1,074	-6	1,087	8
			Dry and Critical	854	829	-25	843	-11	842	-12	843	-11
Total of CVP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,124	1,116	-9	1,152	27	1,147	23	1,155	31
			Dry and Critical	894	878	-16	902	8	902	8	901	8
Total of CVP Facilities												
CVP Generation Facilities												
Capacity	At load center	(MW)	Long Term	1,646	1,647	1	1,659	13	1,660	14	1,661	15
			Dry and Critical	1,494	1,505	11	1,523	29	1,525	32	1,526	32
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,712	4,701	-11	4,711	-1	4,718	6	4,715	3
			Dry and Critical	3,533	3,513	-20	3,500	-34	3,506	-27	3,479	-54
CVP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,124	1,116	-9	1,152	27	1,147	23	1,155	31
			Dry and Critical	894	878	-16	902	8	902	8	901	8
All CVP Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	3,588	3,585	-2	3,560	-28	3,571	-17	3,559	-28
			Dry and Critical	2,639	2,635	-4	2,598	-41	2,604	-35	2,578	-62

Notes:
1. Results are estimated using LTGEN utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-3
Power and Pumping Reporting Metrics - CVP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to No Action Alternative						
				No Action Alternative	NODOS Alternative A	NODOS Alternative A minus No Action Alternative	NODOS Alternative B	NODOS Alternative B minus No Action Alternative	NODOS Alternative C	NODOS Alternative C minus No Action Alternative
Central Valley Project (CVP) Facilities										
CVP Generation Facilities										
North of the Delta CVP Generation Facilities										
Trinity Reservoir Power Facility										
Capacity	At load center	(MW)	Long Term	114	116	2	116	2	116	2
			Dry and Critical	103	106	3	106	3	107	4
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	396	400	4	400	5	401	5
			Dry and Critical	293	296	3	297	4	295	2
Lewiston Power Facility										
Capacity	At load center	(MW)	Long Term	0	0	0	0	0	0	0
			Dry and Critical	0	0	0	0	0	0	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	0	0	0	0
			Dry and Critical	0	0	0	0	0	0	0
Carr Power Facility										
Capacity	At load center	(MW)	Long Term	145	145	0	145	0	145	0
			Dry and Critical	145	145	0	145	0	145	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	285	285	0	287	2	285	0
			Dry and Critical	286	278	-8	280	-6	272	-13
Spring Creek Power Facility										
Capacity	At load center	(MW)	Long Term	179	178	0	178	0	178	0
			Dry and Critical	179	178	0	178	0	178	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	339	336	-2	339	0	336	-3
			Dry and Critical	286	276	-10	279	-7	271	-15
Shasta Power Facility										
Capacity	At load center	(MW)	Long Term	571	578	7	579	8	580	9
			Dry and Critical	508	522	14	525	17	528	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	2,050	2,056	5	2,057	7	2,060	9
			Dry and Critical	1,517	1,518	1	1,520	2	1,516	-2
Keswick Power Facility										
Capacity	At load center	(MW)	Long Term	48	48	0	48	0	48	0
			Dry and Critical	40	39	0	39	0	39	-1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	419	419	0	420	1	420	0
			Dry and Critical	344	342	-3	341	-3	339	-5
Folsom Power Facility										
Capacity	At load center	(MW)	Long Term	169	171	2	171	1	171	2
			Dry and Critical	155	158	3	158	3	159	3
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	563	564	1	564	1	564	1
			Dry and Critical	304	306	2	306	2	306	2
Nimbus Power Facility										
Capacity	At load center	(MW)	Long Term	7	7	0	7	0	7	0
			Dry and Critical	5	5	0	5	0	5	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	65	65	0	65	0	65	0
			Dry and Critical	40	40	0	40	0	40	0
New Melones Power Facility										
Capacity	At load center	(MW)	Long Term	312	312	0	312	0	312	0
			Dry and Critical	277	277	0	277	0	277	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	473	473	0	473	0	473	0
			Dry and Critical	342	342	0	342	0	342	0
Total of North of the Delta CVP Generation Facilities										
Capacity	At load center	(MW)	Long Term	1,546	1,556	10	1,556	10	1,558	13
			Dry and Critical	1,410	1,430	20	1,432	22	1,437	26
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,590	4,598	8	4,605	15	4,603	13
			Dry and Critical	3,412	3,398	-14	3,405	-7	3,381	-31
South of the Delta CVP Generation Facilities										
CVP San Luis Power Facility										
Capacity	At load center	(MW)	Long Term	100	102	2	103	3	102	1
			Dry and Critical	93	91	-2	92	-1	88	-5
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	104	106	2	106	2	105	1
			Dry and Critical	91	92	1	91	0	88	-3
O'Neill Power Facility										
Capacity	At load center	(MW)	Long Term	1	1	0	1	0	1	0
			Dry and Critical	1	1	0	1	0	1	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	7	7	0	7	0	7	0
			Dry and Critical	10	10	0	11	0	10	0
Total of South of the Delta CVP Generation Facilities										
Capacity	At load center	(MW)	Long Term	101	103	2	104	3	102	1
			Dry and Critical	94	92	-2	93	-1	89	-5
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	111	113	3	113	3	112	1
			Dry and Critical	101	102	1	102	1	98	-3
Total of CVP Generation Facilities										
Capacity	At load center	(MW)	Long Term	1,647	1,659	12	1,660	13	1,661	14
			Dry and Critical	1,505	1,523	18	1,525	20	1,526	21
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,701	4,711	11	4,718	18	4,715	14
			Dry and Critical	3,513	3,500	-13	3,506	-6	3,479	-34

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Table 31B-3
Power and Pumping Reporting Metrics - CVP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to No Action Alternative						
				No Action Alternative	NODOS Alternative A	NODOS Alternative A minus No Action Alternative	NODOS Alternative B	NODOS Alternative B minus No Action Alternative	NODOS Alternative C	NODOS Alternative C minus No Action Alternative
Central Valley Project (CVP) Facilities										
CVP Pumping Facilities										
North of the Delta CVP Pumping Facilities										
Red Bluff Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	2	5	2	6	4	5	3
			Dry and Critical	1	4	2	4	3	3	2
Corning Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	4	4	0	4	0	4	0
			Dry and Critical	2	2	0	2	0	2	0
Tehama Other Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	7	16	9	22	15	17	10
			Dry and Critical	4	12	8	13	9	12	8
Folsom Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	14	14	0	14	0	14	0
			Dry and Critical	17	17	-1	17	-1	17	0
Contra Costa Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	28	28	0	28	0	28	0
			Dry and Critical	24	24	0	24	0	24	0
Total of North of the Delta CVP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	55	67	11	74	18	68	13
			Dry and Critical	49	59	10	60	11	59	10
South of the Delta CVP Pumping Facilities										
Jones Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	522	536	14	536	14	540	18
			Dry and Critical	431	440	9	442	11	444	13
CVP Banks Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	18	18	1	19	1	19	1
			Dry and Critical	9	9	1	9	0	9	0
O'Neill Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	63	65	2	64	1	64	1
			Dry and Critical	49	50	1	50	2	50	1
CVP San Luis Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	191	200	8	199	7	198	6
			Dry and Critical	159	157	-2	162	3	153	-6
San Felipe Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	37	37	0	36	-1	37	0
			Dry and Critical	30	31	1	30	1	32	2
CVP Dos Amigos Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	103	105	2	103	0	104	1
			Dry and Critical	57	61	4	58	1	60	3
DMC Intertie Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	2	2	0	2	0	2	0
			Dry and Critical	1	1	0	1	0	1	0
San Luis Other Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	72	74	1	72	0	73	0
			Dry and Critical	40	43	2	41	1	42	2
DMC Other Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0
			Dry and Critical	1	1	0	1	0	1	0
Misc Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	51	48	-3	43	-8	50	-1
			Dry and Critical	53	51	-2	48	-5	52	-1
Total of South of the Delta CVP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,060	1,085	25	1,074	13	1,087	27
			Dry and Critical	829	843	14	842	13	843	14
Total of CVP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,116	1,152	36	1,147	32	1,155	40
			Dry and Critical	878	902	24	902	25	901	24
Total of CVP Facilities										
CVP Generation Facilities										
Capacity	At load center	(MW)	Long Term	1,647	1,659	12	1,660	13	1,661	14
			Dry and Critical	1,505	1,523	18	1,525	20	1,526	21
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,701	4,711	11	4,718	18	4,715	14
			Dry and Critical	3,513	3,500	-13	3,506	-6	3,479	-34
CVP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,116	1,152	36	1,147	32	1,155	40
			Dry and Critical	878	902	24	902	25	901	24
All CVP Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	3,585	3,560	-25	3,571	-14	3,559	-26
			Dry and Critical	2,635	2,598	-37	2,604	-31	2,578	-58

Notes:
1. Results are estimated using LTGEN utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-4
Power and Pumping Reporting Metrics - SWP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to Existing Condition								
				Existing Condition	No Action Alternative	No Action Alternative minus Existing Condition	NODOS Alternative A	NODOS Alternative A minus Existing Condition	NODOS Alternative B	NODOS Alternative B minus Existing Condition	NODOS Alternative C	NODOS Alternative C minus Existing Condition
State Water Project (SWP) Facilities												
SWP Generation Facilities												
North of the Delta SWP Generation Facilities												
Oroville Reservoir Power Facility												
Capacity	At load center	(MW)	Long Term	226	225	-1	226	0	226	0	226	0
			Dry and Critical	135	132	-3	133	-2	133	-1	133	-1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	1,949	1,944	-5	1,952	3	1,951	2	1,951	2
			Dry and Critical	1,155	1,131	-24	1,138	-17	1,143	-12	1,143	-11
Thermalito Power Facility												
Capacity	At load center	(MW)	Long Term	30	30	0	30	0	30	0	30	0
			Dry and Critical	18	18	0	17	-1	18	0	18	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	245	246	0	246	0	245	0	246	0
			Dry and Critical	147	144	-3	143	-4	144	-4	144	-3
Total of North of the Delta SWP Generation Facilities												
Capacity	At load center	(MW)	Long Term	255	255	-1	256	0	255	0	256	0
			Dry and Critical	153	149	-3	150	-2	151	-2	151	-2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	2,195	2,190	-4	2,198	3	2,197	2	2,197	3
			Dry and Critical	1,302	1,275	-27	1,281	-21	1,287	-15	1,288	-14
South of the Delta SWP Generation Facilities												
SWP San Luis Power Facility												
Capacity	At load center	(MW)	Long Term	115	113	-2	115	0	116	1	114	-1
			Dry and Critical	99	105	5	102	3	103	4	99	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	124	126	2	128	4	128	4	125	2
			Dry and Critical	111	107	-4	117	6	115	4	115	4
Alamo Power Facility												
Capacity	At load center	(MW)	Long Term	12	13	1	13	2	13	2	13	2
			Dry and Critical	10	9	0	11	1	11	1	11	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	95	101	6	105	10	106	11	106	11
			Dry and Critical	81	79	-2	87	6	88	7	88	7
Mojave Power Facility												
Capacity	At load center	(MW)	Long Term	10	11	1	11	2	12	2	11	2
			Dry and Critical	8	8	0	9	1	9	1	9	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	71	79	8	82	11	83	12	82	11
			Dry and Critical	60	58	-1	65	5	65	6	66	6
Devil's Canyon Power Facility												
Capacity	At load center	(MW)	Long Term	106	117	12	122	17	123	17	123	17
			Dry and Critical	88	87	-2	96	8	97	8	97	9
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	856	952	96	990	134	996	140	994	138
			Dry and Critical	716	704	-12	781	65	785	68	790	74
Warner Power Facility												
Capacity	At load center	(MW)	Long Term	44	42	-2	45	0	44	0	45	0
			Dry and Critical	35	31	-3	37	2	36	1	37	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	370	352	-18	371	1	370	-1	372	2
			Dry and Critical	287	259	-29	305	18	297	10	309	22
Castaic Power Facility												
Capacity	At load center	(MW)	Long Term	70	67	-3	70	0	70	0	71	0
			Dry and Critical	55	49	-5	58	3	56	2	58	4
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	616	585	-31	617	1	615	-1	619	3
			Dry and Critical	475	427	-48	506	30	492	17	512	37
Total of South of the Delta SWP Generation Facilities												
Capacity	At load center	(MW)	Long Term	356	363	6	377	20	378	21	377	20
			Dry and Critical	295	289	-6	312	17	311	16	311	16
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	2,132	2,196	64	2,293	161	2,297	165	2,299	167
			Dry and Critical	1,730	1,633	-97	1,862	131	1,842	111	1,881	150
Total of SWP Generation Facilities												
Capacity	At load center	(MW)	Long Term	612	618	6	632	20	633	22	632	21
			Dry and Critical	448	439	-9	462	15	462	15	462	15
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,326	4,386	59	4,491	165	4,493	167	4,496	170
			Dry and Critical	3,033	2,909	-124	3,143	110	3,128	96	3,168	136

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Power and Pumping Reporting Metrics - SWP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to Existing Condition								
				Existing Condition	No Action Alternative	No Action Alternative minus Existing Condition	NODOS Alternative A	NODOS Alternative A minus Existing Condition	NODOS Alternative B	NODOS Alternative B minus Existing Condition	NODOS Alternative C	NODOS Alternative C minus Existing Condition
State Water Project (SWP) Facilities												
SWP Pumping Facilities												
South of the Delta SWP Pumping Facilities												
SWP Banks Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	786	784	-1	820	34	822	36	824	38
			Dry and Critical	604	580	-23	627	23	630	26	637	33
SWP San Luis Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	164	169	4	166	1	166	1	161	-3
			Dry and Critical	134	149	15	132	-2	139	4	132	-3
SWP Dos Amigos Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	354	352	-1	369	16	371	17	372	18
			Dry and Critical	276	258	-18	293	17	291	15	297	21
Buena Vista Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	409	422	13	441	32	442	33	443	34
			Dry and Critical	335	315	-21	359	23	355	20	363	27
Teerink Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	498	513	16	537	39	538	40	539	41
			Dry and Critical	408	383	-25	436	28	432	24	441	33
Chrisman Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,045	1,080	35	1,128	84	1,131	86	1,133	88
			Dry and Critical	850	799	-51	910	60	902	51	920	70
Edmonston Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	3,660	3,783	122	3,954	293	3,963	303	3,970	309
			Dry and Critical	2,979	2,799	-180	3,188	209	3,159	180	3,225	246
Pearblossom Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	596	656	60	683	87	687	91	686	90
			Dry and Critical	499	489	-10	544	45	546	47	550	51
Oso Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	188	179	-9	189	0	188	0	189	1
			Dry and Critical	146	132	-14	155	9	151	5	157	11
South Bay Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	117	119	2	124	7	125	8	125	8
			Dry and Critical	97	86	-11	97	0	97	0	99	2
Del Valle Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0	1	0
			Dry and Critical	1	1	0	1	0	1	0	1	0
Las Perillas Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8	8	0	8	0	8	0	8	0
			Dry and Critical	7	6	-1	7	0	7	0	7	0
Badger Hill Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	22	21	-1	22	0	22	0	22	0
			Dry and Critical	17	16	-2	18	1	18	1	18	1
Total of South of the Delta SWP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	7,848	8,088	239	8,442	594	8,464	616	8,473	625
			Dry and Critical	6,354	6,013	-340	6,768	414	6,727	373	6,848	494
Total of SWP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	7,848	8,088	239	8,442	594	8,464	616	8,473	625
			Dry and Critical	6,354	6,013	-340	6,768	414	6,727	373	6,848	494
Total of SWP Facilities												
SWP Generation Facilities												
Capacity	At load center	(MW)	Long Term	612	618	6	632	20	633	22	632	21
			Dry and Critical	448	439	-9	462	15	462	15	462	15
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,326	4,386	59	4,491	165	4,493	167	4,496	170
			Dry and Critical	3,033	2,909	-124	3,143	110	3,128	96	3,168	136
SWP Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	7,848	8,088	239	8,442	594	8,464	616	8,473	625
			Dry and Critical	6,354	6,013	-340	6,768	414	6,727	373	6,848	494
All SWP Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	-3,522	-3,702	-180	-3,951	-429	-3,971	-449	-3,977	-455
			Dry and Critical	-3,321	-3,104	217	-3,625	-304	-3,599	-277	-3,679	-358

Notes:
1. Results are estimated using SWP_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-4
Power and Pumping Reporting Metrics - SWP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to No Action Alternative						
				No Action Alternative	NODOS Alternative A	NODOS Alternative A minus No Action Alternative	NODOS Alternative B	NODOS Alternative B minus No Action Alternative	NODOS Alternative C	NODOS Alternative C minus No Action Alternative
State Water Project (SWP) Facilities										
SWP Generation Facilities										
North of the Delta SWP Generation Facilities										
Oroville Reservoir Power Facility										
Capacity	At load center	(MW)	Long Term	225	226	1	226	1	226	1
			Dry and Critical	132	133	1	133	2	133	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	1,944	1,952	8	1,951	7	1,951	7
			Dry and Critical	1,131	1,138	7	1,143	12	1,143	12
Thermalito Power Facility										
Capacity	At load center	(MW)	Long Term	30	30	0	30	0	30	0
			Dry and Critical	18	17	0	18	0	18	0
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	246	246	0	245	0	246	0
			Dry and Critical	144	143	-1	144	-1	144	0
Total of North of the Delta SWP Generation Facilities										
Capacity	At load center	(MW)	Long Term	255	256	1	255	1	256	1
			Dry and Critical	149	150	1	151	2	151	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	2,190	2,198	8	2,197	6	2,197	7
			Dry and Critical	1,275	1,281	6	1,287	11	1,288	12
South of the Delta SWP Generation Facilities										
SWP San Luis Power Facility										
Capacity	At load center	(MW)	Long Term	113	115	2	116	3	114	1
			Dry and Critical	105	102	-2	103	-1	99	-6
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	126	128	2	128	2	125	-1
			Dry and Critical	107	117	10	115	9	115	9
Alamo Power Facility										
Capacity	At load center	(MW)	Long Term	13	13	1	13	1	13	1
			Dry and Critical	9	11	1	11	1	11	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	101	105	4	106	5	106	4
			Dry and Critical	79	87	8	88	9	88	10
Mojave Power Facility										
Capacity	At load center	(MW)	Long Term	11	11	0	12	1	11	0
			Dry and Critical	8	9	1	9	1	9	1
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	79	82	3	83	4	82	3
			Dry and Critical	58	65	6	65	7	66	7
Devil's Canyon Power Facility										
Capacity	At load center	(MW)	Long Term	117	122	5	123	5	123	5
			Dry and Critical	87	96	9	97	10	97	10
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	952	990	38	996	44	994	42
			Dry and Critical	704	781	77	785	81	790	86
Warner Power Facility										
Capacity	At load center	(MW)	Long Term	42	45	2	44	2	45	2
			Dry and Critical	31	37	5	36	5	37	6
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	352	371	19	370	17	372	20
			Dry and Critical	259	305	47	297	39	309	50
Castaic Power Facility										
Capacity	At load center	(MW)	Long Term	67	70	4	70	3	71	4
			Dry and Critical	49	58	9	56	7	58	9
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	585	617	32	615	29	619	34
			Dry and Critical	427	506	79	492	65	512	85
Total of South of the Delta SWP Generation Facilities										
Capacity	At load center	(MW)	Long Term	363	377	14	378	15	377	14
			Dry and Critical	289	312	23	311	22	311	22
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	2,196	2,293	97	2,297	101	2,299	103
			Dry and Critical	1,633	1,862	228	1,842	208	1,881	247
Total of SWP Generation Facilities										
Capacity	At load center	(MW)	Long Term	618	632	15	633	16	632	15
			Dry and Critical	439	462	24	462	24	462	23
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,386	4,491	105	4,493	107	4,496	110
			Dry and Critical	2,909	3,143	234	3,128	220	3,168	259

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Table 31B-4
Power and Pumping Reporting Metrics - SWP Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to No Action Alternative						
				No Action Alternative	NODOS Alternative A	NODOS Alternative A minus No Action Alternative	NODOS Alternative B	NODOS Alternative B minus No Action Alternative	NODOS Alternative C	NODOS Alternative C minus No Action Alternative
State Water Project (SWP) Facilities										
SWP Pumping Facilities										
South of the Delta SWP Pumping Facilities										
SWP Banks Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	784	820	35	822	38	824	39
			Dry and Critical	580	627	47	630	49	637	57
SWP San Luis Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	169	166	-3	166	-3	161	-7
			Dry and Critical	149	132	-17	139	-10	132	-17
SWP Dos Amigos Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	352	369	17	371	19	372	20
			Dry and Critical	258	293	35	291	33	297	39
Buena Vista Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	422	441	19	442	20	443	21
			Dry and Critical	315	359	44	355	40	363	48
Teerink Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	513	537	23	538	24	539	25
			Dry and Critical	383	436	53	432	49	441	58
Chrisman Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1,080	1,128	49	1,131	52	1,133	53
			Dry and Critical	799	910	111	902	103	920	122
Edmonston Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	3,783	3,954	171	3,963	181	3,970	187
			Dry and Critical	2,799	3,188	389	3,159	360	3,225	426
Pearblossom Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	656	683	26	687	31	686	29
			Dry and Critical	489	544	55	546	56	550	61
Oso Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	179	189	9	188	9	189	10
			Dry and Critical	132	155	24	151	20	157	26
South Bay Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	119	124	5	125	6	125	6
			Dry and Critical	86	97	11	97	10	99	12
Del Valle Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	1	1	0	1	0	1	0
			Dry and Critical	1	1	0	1	0	1	0
Las Perillas Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8	8	0	8	0	8	0
			Dry and Critical	6	7	1	7	1	7	1
Badger Hill Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	21	22	1	22	1	22	1
			Dry and Critical	16	18	2	18	2	18	3
Total of South of the Delta SWP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8,088	8,442	354	8,464	376	8,473	385
			Dry and Critical	6,013	6,768	755	6,727	714	6,848	834
Total of SWP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8,088	8,442	354	8,464	376	8,473	385
			Dry and Critical	6,013	6,768	755	6,727	714	6,848	834
Total of SWP Facilities										
SWP Generation Facilities										
Capacity	At load center	(MW)	Long Term	618	632	15	633	16	632	15
			Dry and Critical	439	462	24	462	24	462	23
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	4,386	4,491	105	4,493	107	4,496	110
			Dry and Critical	2,909	3,143	234	3,128	220	3,168	259
SWP Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	8,088	8,442	354	8,464	376	8,473	385
			Dry and Critical	6,013	6,768	755	6,727	714	6,848	834
All SWP Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	-3,702	-3,951	-249	-3,971	-269	-3,977	-275
			Dry and Critical	-3,104	-3,625	-521	-3,599	-494	-3,679	-575

Notes:
1. Results are estimated using SWP_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-5
Power and Pumping Reporting Metrics - Proposed NODOS Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to Existing Condition								
				Existing Condition	No Action Alternative	No Action Alternative minus Existing Condition	NODOS Alternative A	NODOS Alternative A minus Existing Condition	NODOS Alternative B	NODOS Alternative B minus Existing Condition	NODOS Alternative C	NODOS Alternative C minus Existing Condition
Proposed North of the Delta Offstream Storage (NODOS) Facilities												
NODOS Generation Facilities												
Funks Reservoir Power Facility												
Capacity	At load center	(MW)	Long Term	0	0	0	10	10	11	11	13	13
			Dry and Critical	0	0	0	10	10	11	11	14	14
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	89	89	99	99	115	115
			Dry and Critical	0	0	0	84	84	96	96	121	121
Sacramento River Pipeline Power Facility												
Capacity	At load center	(MW)	Long Term	0	0	0	3	3	0	0	3	3
			Dry and Critical	0	0	0	4	4	0	0	4	4
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	27	27	0	0	30	30
			Dry and Critical	0	0	0	33	33	0	0	39	39
G-C Canal TRR Power Facility												
Capacity	At load center	(MW)	Long Term	0	0	0	1	1	1	1	1	1
			Dry and Critical	0	0	0	1	1	0	0	2	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	10	10	5	5	11	11
			Dry and Critical	0	0	0	12	12	4	4	13	13
Total of NODOS Generation Facilities												
Capacity	At load center	(MW)	Long Term	0	0	0	14	14	12	12	18	18
			Dry and Critical	0	0	0	15	15	11	11	20	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	126	126	104	104	157	157
			Dry and Critical	0	0	0	129	129	100	100	173	173
NODOS Pumping Facilities												
Funks Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	149	149	161	161	191	191
			Dry and Critical	0	0	0	110	110	84	84	127	127
Sacramento River Pipeline Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	53	53	0	0	58	58
			Dry and Critical	0	0	0	52	52	0	0	50	50
G-C Canal TRR Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	12	12	15	15	13	13
			Dry and Critical	0	0	0	9	9	8	8	9	9
T-C Canal Diversion Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	2	2	0	5	3	7	5	6	3
			Dry and Critical	2	1	0	4	3	4	3	4	3
G-C Canal Diversion Pumping Facility												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	10	11	0	10	0	11	1	10	0
			Dry and Critical	10	10	0	9	-1	10	0	9	-1
Total of NODOS Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	13	13	0	229	217	195	183	278	265
			Dry and Critical	11	12	0	184	172	106	95	199	188
Total of NODOS Facilities												
NODOS Generation Facilities												
Capacity	At load center	(MW)	Long Term	0	0	0	14	14	12	12	18	18
			Dry and Critical	0	0	0	15	15	11	11	20	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	0	0	126	126	104	104	157	157
			Dry and Critical	0	0	0	129	129	100	100	173	173
NODOS Pumping Facilities												
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	13	13	0	229	217	195	183	278	265
			Dry and Critical	11	12	0	184	172	106	95	199	188
All NODOS Facilities												
Net Generation	Total of all Facilities	(GWh)	Long Term	-13	-13	0	-103	-90	-91	-79	-121	-108
			Dry and Critical	-11	-12	0	-54	-43	-6	5	-26	-15

Notes:
1. Results are estimated using NODOS_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-5
Power and Pumping Reporting Metrics - Proposed NODOS Facilities Detail
NODOS ADEIRS and FS Alternatives
February 8, 2011

				Comparisons to No Action Alternative						
				No Action Alternative	NODOS Alternative A	NODOS Alternative A minus No Action Alternative	NODOS Alternative B	NODOS Alternative B minus No Action Alternative	NODOS Alternative C	NODOS Alternative C minus No Action Alternative
Proposed North of the Delta Offstream Storage (NODOS) Facilities										
NODOS Generation Facilities										
Funks Reservoir Power Facility										
Capacity	At load center	(MW)	Long Term	0	10	10	11	11	13	13
			Dry and Critical	0	10	10	11	11	14	14
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	89	89	99	99	115	115
			Dry and Critical	0	84	84	96	96	121	121
Sacramento River Pipeline Power Facility										
Capacity	At load center	(MW)	Long Term	0	3	3	0	0	3	3
			Dry and Critical	0	4	4	0	0	4	4
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	27	27	0	0	30	30
			Dry and Critical	0	33	33	0	0	39	39
G-C Canal TRR Power Facility										
Capacity	At load center	(MW)	Long Term	0	1	1	1	1	1	1
			Dry and Critical	0	1	1	0	0	2	2
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	10	10	5	5	11	11
			Dry and Critical	0	12	12	4	4	13	13
Total of NODOS Generation Facilities										
Capacity	At load center	(MW)	Long Term	0	14	14	12	12	18	18
			Dry and Critical	0	15	15	11	11	20	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	126	126	104	104	157	157
			Dry and Critical	0	129	129	100	100	173	173
NODOS Pumping Facilities										
Funks Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	149	149	161	161	191	191
			Dry and Critical	0	110	110	84	84	127	127
Sacramento River Pipeline Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	53	53	0	0	58	58
			Dry and Critical	0	52	52	0	0	50	50
G-C Canal TRR Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	0	12	12	15	15	13	13
			Dry and Critical	0	9	9	8	8	9	9
T-C Canal Diversion Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	2	5	3	7	5	6	3
			Dry and Critical	1	4	3	4	3	4	3
G-C Canal Diversion Pumping Facility										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	11	10	-1	11	1	10	-1
			Dry and Critical	10	9	-1	10	0	9	-2
Total of NODOS Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	13	229	216	195	182	278	265
			Dry and Critical	12	184	172	106	95	199	188
Total of NODOS Facilities										
NODOS Generation Facilities										
Capacity	At load center	(MW)	Long Term	0	14	14	12	12	18	18
			Dry and Critical	0	15	15	11	11	20	20
Energy Generation	Total of all Facilities at load center	(GWh)	Long Term	0	126	126	104	104	157	157
			Dry and Critical	0	129	129	100	100	173	173
NODOS Pumping Facilities										
Energy Use	Total of all Facilities at load center	(GWh)	Long Term	13	229	216	195	182	278	265
			Dry and Critical	12	184	172	106	95	199	188
All NODOS Facilities										
Net Generation	Total of all Facilities	(GWh)	Long Term	-13	-103	-90	-91	-78	-121	-108
			Dry and Critical	-12	-54	-43	-6	6	-26	-15

Notes:
1. Results are estimated using NODOS_Power utilizing data from the CALSIM II model
2. Long Term is the average quantity for the calendar years 1922-2002.
3. Dry and Critical is the average quantity for dry and critical years according to the Sacramento River 40-30-30 index

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Table 31B-6

Central Valley Project Pumping Plant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Jones Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5	237.5
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	16	16	16	16	16	16	16	16	16	16	16	16
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%	47.7%
On Peak Cap Adj Factor	1.05	1.05	1.05	1.50	1.20	2.20	1.60	2.30	1.50	1.05	1.05	1.05
Off Peak Cap Adj Factor	1.05	1.05	1.05	0.00	1.20	2.20	1.60	2.30	1.50	1.05	1.05	1.05

CVP Banks Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	297	297	297	297	297	297	297	297	297	297	297	297
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	53.7%	53.7%	53.7%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	53.7%	53.7%	53.7%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

Contra Costa Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8	164.8
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Transmission Loss (%)	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.20	1.20	1.20	1.20	2.00	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.20	1.20	1.20	1.20	2.00	2.00

O'Neill Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2	59.2
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%	48.5%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00

CVP San Luis Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	function	function	function	function	function	function	function	function	function	function	function	function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%
On Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

San Felipe Pumping Plant (Pacheco)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	12	12	12	12	12	12	12	12	12	12	12	12
Capacity/Unit (MW)	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.20	1.20	1.20	1.20	1.20
Off Peak Cap Adj Factor	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.20	1.20	1.20	1.20	1.20

CVP Dos Amigos Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	56.6%	56.6%	56.6%	76.6%
On Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Off Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Folsom Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	5	5	5	5	5	5	5	5	5	5	5	5
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50

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Table 31B-6

Central Valley Project Pumping Plant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Corning Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	190	190	190	190	190	190	190	190	190	190	190	190
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	3.00	4.00	4.00	4.00	4.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00
Off Peak Cap Adj Factor	3.00	4.00	4.00	4.00	4.00	3.00	2.00	2.00	2.00	2.00	2.00	2.00

Red Bluff Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	12	12	12	12	12	12	0	0	0	0	0	12
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Off Peak Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

San Luis Other												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5	93.5
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.50	2.00
Off Peak Cap Adj Factor	2.00	2.00	2.00	2.00	2.00	2.00	1.50	1.50	1.50	1.50	1.50	2.00

DMC Other												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%	8.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	3.00	3.00	3.00	3.00	2.50	2.00	2.00	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	3.00	3.00	3.00	3.00	2.50	2.00	2.00	1.50	1.50	1.50	1.50	1.50

Tehama Other												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2	43.2
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	2.00	3.00	3.00	3.00	3.00	3.00	1.50	1.50	1.50	1.50	1.50	1.50
Off Peak Cap Adj Factor	2.00	3.00	3.00	3.00	3.00	3.00	1.50	1.50	1.50	1.50	1.50	1.50

Miscellaneous Project Use												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
MW	7	5	6	6	9	11	4	5	15	23	33	9
Transmission Loss (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Percentage of Main Pumps	15.8%	9.2%	5.9%	8.0%	12.5%	13.1%	39.9%	81.1%	35.5%	43.2%	38.6%	17.9%
Percent Eng Off Peak (%)	59.1%	61.6%	67.3%	64.3%	62.0%	59.0%	52.2%	52.9%	49.1%	50.3%	49.8%	61.3%

DMC Intertie												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3	42.3
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
On Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Off Peak Cap Adj Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

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Table 31B-7

State Water Project Pumping Plant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Banks Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	297	297	297	297	297	297	297	297	297	297	297	297
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	0	0	0	0	0	0	0	0	0	0	0	0
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	53.7%	53.7%	53.7%	0.1%	0.1%	0.1%	0.1%	0.1%	0.1%	53.7%	53.7%	53.7%

SWP San Luis Pumping Plant (Gianelli Pumping Plant)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	function	function	function	function	function	function	function	function	function	function	function	function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	function	function	function	function	function	function	function	function	function	function	function	function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%	89.7%

Dos Amigos Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9	137.9
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6	27.6
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Percent Eng Off Peak (%)	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	76.6%	56.6%	56.6%	56.6%	76.6%

Buena Vista Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	242	242	242	242	242	242	242	242	242	242	242	242
Plant Power Rating (MW)	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797	107.797
Transmission Loss (%)	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Teerink (Wheeler Ridge) Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	295	295	295	295	295	295	295	295	295	295	295	295
Plant Power Rating (MW)	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9	111.9
Transmission Loss (%)	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Chrisman (Wind Gap) Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	639	639	639	639	639	639	639	639	639	639	639	639
Plant Power Rating (MW)	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18	246.18
Transmission Loss (%)	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%	1.51%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Edmonson Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236	2,236
Plant Power Rating (MW)	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84	775.84
Transmission Loss (%)	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%	1.64%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Pearblossom Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	703	703	703	703	703	703	703	703	703	703	703	703
Plant Power Rating (MW)	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588	151.588
Transmission Loss (%)	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%	0.30%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Oso Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	280	280	280	280	280	280	280	280	280	280	280	280
Plant Power Rating (MW)	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975	69.975
Transmission Loss (%)	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%	2.34%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

South Bay Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	797	797	797	797	797	797	797	797	797	797	797	797
Plant Power Rating (MW)	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69	20.69
Transmission Loss (%)	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%	2.3%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Del Valle Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	72	72	72	72	72	72	72	72	72	72	72	72
Plant Power Rating (MW)	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746	0.746
Transmission Loss (%)	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%	1.8%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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Table 31B-7

State Water Project Pumping Plant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Las Perillas Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	77	77	77	77	77	77	77	77	77	77	77	77
Plant Power Rating (MW)	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021	3.021
Transmission Loss (%)	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Badger Hill Pumping Plant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	200	200	200	200	200	200	200	200	200	200	200	200
Plant Power Rating (MW)	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766	8.766
Transmission Loss (%)	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%	1.32%
Percent Eng Off Peak (%)	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

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Table 31B-8

Proposed NODOS Pumping Plant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Tehama-Colusa Canal Pump Station												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plant Efficiency (%)	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Dynamic Head (feet)	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Plant Power Rating (MW)	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
Transmission Loss (%)	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Flow Capacity (CFS)	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000	2000

Glenn-Colusa Canal Terminal Regulating Reservoir Pump Station													
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Head Loss	Number of Pipelines	2	2	2	2	2	2	2	2	2	2	2	2
	Flow/Pipeline (CFS)	900	900	900	900	900	900	900	900	900	900	900	900
	Pipe Roughness	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	Pipeline Diameter (feet)	12	12	12	12	12	12	12	12	12	12	12	12
	Pipeline Length (feet)	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400	14,400
Elevation 1		111.5	111.5	111.5	111.5	111.5	111.5	111.5	111.5	111.5	111.5	111.5	111.5
Elevation 2		203.0	203	203	203	203	203	203	203	203	203	203	203
Plant Power Rating (MW)		19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7	19.7
Plant Efficiency (%)		82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%
Transmission Loss (%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Percent Eng Off Peak (%)													

Sacramento River Pump Station													
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Head Loss	Number of Pipelines	2	2	2	2	2	2	2	2	2	2	2	2
	Flow/Pipeline (CFS)	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000	1000
	Pipe Roughness	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	Pipeline Diameter (feet)	12	12	12	12	12	12	12	12	12	12	12	12
	Pipeline Length (feet)	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000	70,000
Plant Power Rating (MW)		65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7
Plant Efficiency (%)		82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%
Transmission Loss (%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Elevation 1		Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage	Sac Stage
Elevation 2		203	203	203	203	203	203	203	203	203	203	203	203
Percent Eng Off Peak (%)		100.00%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Funks Pump Station													
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Head Loss	Number of Pipelines	1	1	1	1	1	1	1	1	1	1	1	1
	Flow/Pipeline (CFS)	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900	5900
	$Pipe_{concrete}$ Roughness	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.003
	$Pipe_{steel}$ Roughness	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
	Pipeline Diameter (feet)	30	30	30	30	30	30	30	30	30	30	30	30
	$Pipeline_{concrete}$ Length (feet)	3,031	3,031	3,031	3,031	3,031	3,031	3,031	3,031	3,031	3,031	3,031	3,031
	$Pipeline_{steel}$ Length (feet)	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Elevation 1		203	203	203	203	203	203	203	203	203	203	203	203
Elevation 2		Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS	Sites WS
Plant Power Rating (MW)		181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4	181.4
Plant Efficiency (%)		82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%	82.0%
Transmission Loss (%)		2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Percent Eng Off Peak (%)		100.00%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Glenn Colusa Canal Pump Station												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Plant Efficiency (%)	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%	85.0%
Dynamic Head (feet)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Plant Power Rating (MW)	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
Transmission Loss (%)	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%	2.00%
Flow Capacity (CFS)	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000	3000

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Table 31B-9

Central Valley Project Powerplant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Trinity Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
`	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Lewiston Powerplant - Baseload Operation												
	Oct	Nov	Dec	Jan	0	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	0	0	0	0	0	0	0	0	0	0	0	0
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Carr Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Spring Creek Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Shasta Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	5	5	5	5	5	5	5	5	5	5	5	5
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Keswick Powerplant - Baseload Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	3	3	3	3	3	3	3	3	3	3	3	3
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Folsom Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	3	3	3	3	3	3	3	3	3	3	3	3
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Nimbus Powerplant - Baseload Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

New Melones Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	2	2	2	2	2	2	2	2	2	2	2	2
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

CVP San Luis Powerplant - Peaking Operation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%
Share of Total Cap (%)	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%	47.1%

O'Neill Powerplant - Baseload Operation, flow computation												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	6	6	6	6	6	6	6	6	6	6	6	6
Capacity/Unit (MW)	3	3	3	3	3	3	3	3	3	3	3	3
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

Table 31B-10

State Water Project Powerplant Characteristics

NODOS ADEIRS and FS Alternatives

February 8, 2011

Hyatt (Lake Oroville) Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Maximum Flow Capacity (cfs)	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950	16,950
Plant Power Rating (MW)	819	819	819	819	819	819	819	819	819	819	819	819
Plant Efficiency	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

Thermalito Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Maximum Flow Capacity (cfs)	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400	17,400
Plant Power Rating (MW)	120	120	120	120	120	120	120	120	120	120	120	120
Plant Efficiency	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%	87.3%
Transmission Loss (%)	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%	4.5%

SWP San Luis (Gianelli Powerplant)												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Capacity/Unit (MW)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
# Units	8	8	8	8	8	8	8	8	8	8	8	8
Share of Total Cap (%)	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%	52.9%
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%

AlamoPowerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	105	105	105	105	105	105	105	105	105	105	105	105
Maximum Flow Capacity (cfs)	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740	1,740
Plant Power Rating (MW)	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6	19.6
Plant Efficiency	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%	80.1%
Transmission Loss (%)	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%

Mojave Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	95	95	95	95	95	95	95	95	95	95	95	95
Maximum Flow Capacity (cfs)	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880	2,880
Plant Power Rating (MW)	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90	32.90
Plant Efficiency	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%	84.00%
Transmission Loss (%)	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%	5.93%

Devil's Canyon Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113	1,113
Maximum Flow Capacity (cfs)	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940	2,940
Plant Power Rating (MW)	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90	357.90
Plant Efficiency	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%	82.03%
Transmission Loss (%)	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%	2.23%

W. E. Warner Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	573	573	573	573	573	573	573	573	573	573	573	573
Maximum Flow Capacity (cfs)	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564	1,564
Plant Power Rating (MW)	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2	78.2
Plant Efficiency	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%	81.4%
Transmission Loss (%)	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%	1.4%

Castaic Powerplant												
	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Energy Factor (kWh/af)	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function	Function
Maximum Flow Capacity (cfs)	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840	17,840
Plant Power Rating (MW)	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260	1,260
Plant Efficiency	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%
Transmission Loss (%)	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%