Energy Division Proposed Scenarios

for use in R. 12-03-014

August 2012

Prepared by CPUC Energy Division,
for the 2012 Long-Term Procurement Plan Rulemaking (R.) 12-03-014:

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Terminology

Acronym	Definition
CPUC	California Public Utilities Commission
CEC	California Energy Commission
CAISO	California Independent System Operator
ARB	Air Resources Board
SWRCB	State Water Resources Control Board
TEPPC	Transmission Expansion Planning Policy Committee
IOU	Investor Owned Utilities
LSE	Load Serving Entity
PG&E	Pacific Gas and Electric
SCE	Southern California Edison
SDG&E	San Diego Gas & Electric
1-in-10	1 in 10 year weather event (peak) forecast
1-in-2	1 in 2 year weather event (peak) forecast
AB	Assembly Bill
CED	California Energy Demand Forecast
DSM	Demand Side Management
CHP	Combined Heat and Power
GWh	Gigawatt hour
IEPR	Integrated Energy Policy Report
LCA	Local Capacity Area
LCR	Local Capacity Requirement
LTPP	Long Term Procurement Plan
MW	Megawatt
NQC	Net Qualifying Capacity
OTC	Once Through Cooled
PTO	Participating Transmission Owner
RRNS	Residual Renewable Net Short
RPS	Renewable Portfolio Standard
SGIP	Self-Generation Incentive Program
TPP	Transmission Planning Process

Definitions

An **Assumption** is a statement about the future for a given resource or resource type. For example, future load conditions are an assumption.

A **Scenario** is a complete set of assumptions defining a possible future world. Scenarios are driven by major factors with impacts across many aspects of loads and resources. For example, an increase or decrease in load would constitute a changed scenario since the impacts would potentially affect planning reserve margins, the amounts of renewables, and transmission needs.

A **Portfolio** is an important component of scenarios. Portfolios are the mix of resources to be modeled, created as a result of applying the assumptions in a specific scenario. A high distributed generation scenario would have a different portfolio of resources than a low cost scenario.

Sensitivities are variations on a scenario where one variable is modified to assess its impact on the overall scenario results. Different renewable portfolios, holding other assumptions constant, are an example of sensitivities.

The Load Forecast refers to load levels, measured by both annual peak demand and annual energy consumption. Load forecasts are strongly influenced by economic and demographic factors.

A **Managed Forecast** refers to a forecast that has been adjusted to account for programs or expectations not embedded into the forecast. An example is adjusting the California Energy Demand Forecast to account for energy efficiency programs not yet currently funded but with expectations for funding and specific programs in the future.

The Probabilistic Load Level refers to the specific weather patterns assumed in the study year. For example a 1-in-10 Load Level indicates a high load event due to weather patterns expected to occur approximately once in every 10 years. The probabilistic load level primarily impacts annual peak demand (and other demand characteristics, such as variability) but does not significantly impact annual energy consumption.

Resource Plans refers to the need to build new resources or maintain existing resources from an electrical reliability perspective.

Bundled Plans refers to the three large Investor Owned Utilities' procurement plans established in compliance with AB 57 to determine upfront and reasonable procurement standards.

I. Background

The Long Term Procurement Plan (LTPP) proceedings were established to ensure a safe, reliable and cost-effective electricity supply in California.[1] Track II[2] of the LTPP pertains to the overall long-term need for new system reliability resources, including the adoption of system resource plans and assessment of long-term reliability needs. These resource plans will allow the Commission to comprehensively consider the impacts of state energy policies on the need for new resources. Based on these system resource plans, the Commission shall consider updates to the Investor-Owned Utilities' (IOUs) bundled procurement plans based on the established standards[3] applied to IOUs to maintain electric supply procurement responsibilities on behalf of IOU customers.

II. Introduction

This Long Term Procurement Plan (LTPP) proceeding was initiated by an Order Instituting Rulemaking issued on March 27, 2012.[4] The rulemaking's stated purpose is "to continue our efforts through integration and refinement of a comprehensive set of procurement policies, practices, and procedures underlying long-term procurement plans."[5]

On May 10, 2012, the Energy Division served its 2012 *Energy Division Straw Proposal on LTPP Planning Standards* (Straw Proposal) to the service list in this proceeding. A workshop was held on May 17, 2012 to discuss the Straw Proposal. That same day, the Scoping Memo was issued, defining the parameters of the 2012 LTPP proceeding.[6] Parties were given the opportunity to file comments on the Straw Proposal on May 31, 2012 and reply comments on June 11, 2012.[7]

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[1] Pursuant to AB 57 (Stats. 2002, ch. 850, Sec 3, Effective September 24, 2002), added Pub. Util. Code § 454.5., enabling resources to resume procurement of resources. *See also* OIR 3/27/2012, Scoping Memo 1.

[2] *See* Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge, (R.)12-03-014, issued May 17, 2012.

[3] *See* PUC § 454.3 for standards.

[4] This proceeding follows Rulemaking (R.)10-05-006, R.08-02-007, R.06-02-013, R.04-04-003, and R.01-10-024, and the rulemakings initiated by the Commission to ensure that California's major investor-owned utilities (IOUs) resume and maintain procurement responsibilities on behalf of their customers.

[5] Order Instituting Rulemaking to Integrate and Refine Procurement Policies and Consider Long-Term Procurement Plans, (R.)12-03-014, issued March 27, 2012, p. 1.

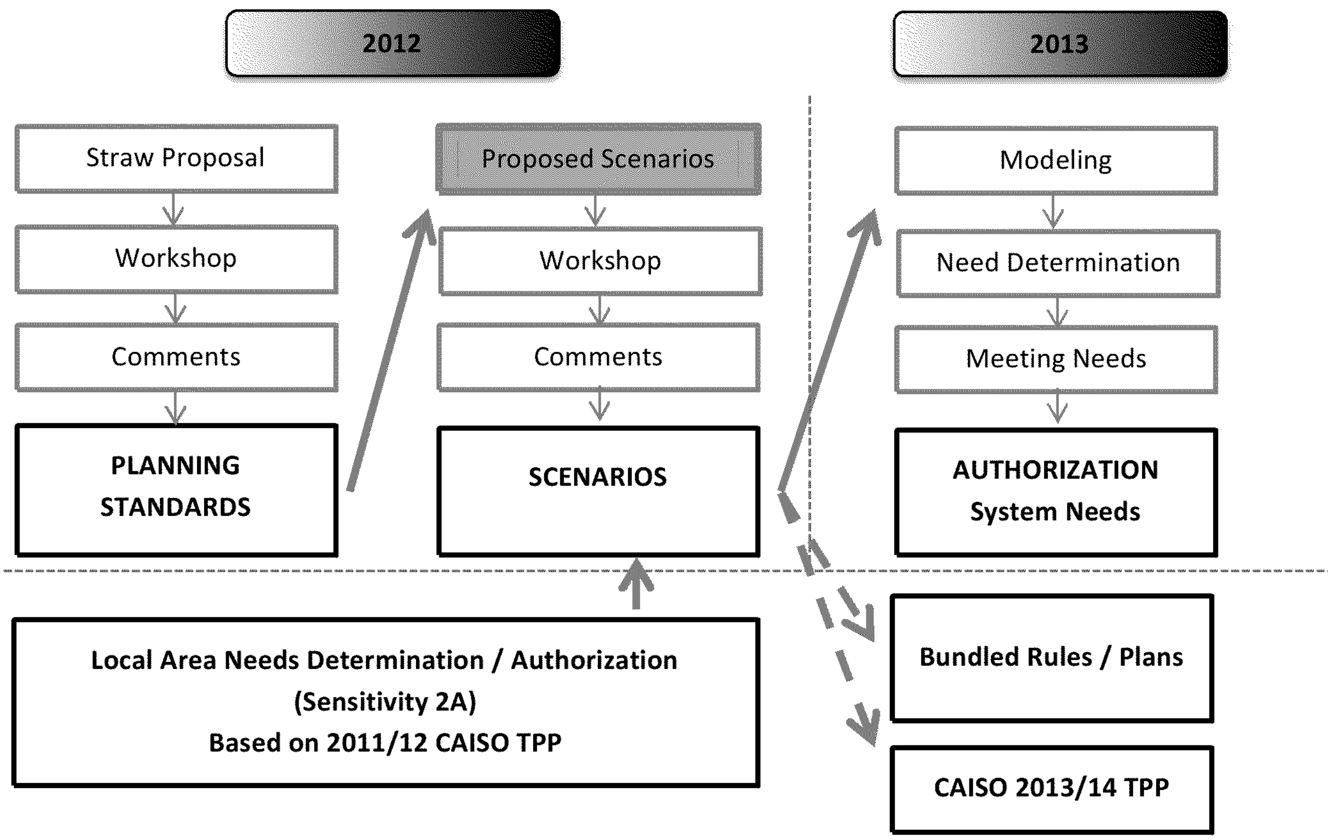
[6] *See* Scoping Memo and Ruling of Assigned Commissioner and Administrative Law Judge, (R.)12-03-014, issued May 17, 2012.

[7] *Id.*

On June 27, 2012, the Assigned Commissioner's Ruling set forth the planning assumptions to be used in the 2012 LTPP proceeding.[8] Those assumptions formed the building blocks for the specific LTPP scenarios set forth in this document. This Staff proposal is the next step in the scenario development process; a workshop and comment process will follow, ultimately leading to a CPUC decision adopting revised scenarios. The Building Scenarios section below discusses the core concepts of the scenario process.

III. 2012 LTPP Roadmap

This diagram shows the roadmap for the 2012 LTPP. This document represents the top box in the 2nd column, the "proposed scenarios".



***Workshops, comments, or other steps may be added to the proceeding in 2013.**

[8] *See* Assigned Commissioner's Ruling on Standardized Planning Assumptions, (R.)12-03-014, issued June 27, 2012.

IV. Guiding Principles

The Guiding Principles for the 2012 LTPP were established in the July 27th Assigned Commissioner's Ruling:

A. **Assumptions** should take a realistic view of expected policy-driven resource achievements in order to ensure reliability of electric service and track progress toward resource policy goals.

B. **Assumptions** should reflect real-world possibilities, including the stated positions or intentions of market participants.

C. **Scenarios** should be informed by an open and transparent process. An exception is confidential market price data, which may be reasonably submitted with publicly available engineering- or market-based price data checked against confidential market price data for accuracy.

D. **Scenarios** should inform the transmission planning process and the analysis of flexible resource requirements to reliably integrate and deliver new resources to loads.[9]

E. **Scenarios** should be designed to form useful policy information including tracking greenhouse gas reduction goals.

F. Resource **portfolios** should be substantially unique from each other.

G. **Scenarios** should inform bundled procurement plan limits and positions.

H. **Scenarios** should be limited in number based on the policy objectives that need to be understood in the current Long Term Procurement Plan cycle.

I. **Agencies** including CPUC, Energy Commission, and the California ISO should strive to reach common understandings and interpretations of planning assumptions.[10]

V. Planning Scope: Area, Time Frame & Assumptions

The following proposed scenarios are specifically created for the California ISO controlled transmission grid and the associated distribution systems. The planning period is established as twenty years in order to take into consideration the major impacts of infrastructure decisions now under consideration. While detailed planning assumptions are used to create an annual assessment in the first ten years (2013-2022), more generic long-term planning assumptions are utilized in the second period (2023-2034), reflecting the heightened uncertainties around future conditions. The second period is designed to

[9] Scenarios used by the California ISO Transmission Planning Process must meet the requirements in Section 24.4.6.6 of the California ISO's Tariff. Scenarios developed in the LTPP process may inform the development of the California ISO's TPP scenarios to the extent feasible under their tariff and adopted by their organization.

[10] ACR (R.) 12-03-014, p. 8.

inform resource choices made today as well as inform policy discussions, and not to make authorizations of need in those years.[11]

The following list of demand and supply planning assumptions comprise the set of planning assumptions to be used in the LTPP. A thorough discussion of each assumption is discussed in its own section of June 27th Assigned Commissioner's Ruling.

List of Demand and Supply Planning Assumptions

Demand

Peak Weather Impacts
Economic and Demographic Drivers
Load Forecast
Incremental Uncommitted Energy Efficiency
Non-Event Based Demand Response
Incremental Small Photovoltaic (behind the meter)
Incremental CHP (behind the meter)

Supply

All Resources
Existing Resources
Imports
Resource and Transmission Additions
Deliverability
Event-Based Demand Response
Incremental CHP (supply-side)
Resource Retirements

VI. Building Scenarios

The LTPP scenarios are built using unique combinations of planning assumptions developed to help answer key resource planning questions before the Commission. The critical questions facing the 2012 LTPP include the following:[12]

1. What new resources need to be authorized and procured to ensure adequate system reliability, both for local areas and the system generally, during the planning horizon?

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[11] *See* ACR (R.)12-03-014, p. 9.

[12] Questions are referenced from ACR (R.)12-03-014, pp. 6-7.

- What is the need for flexible resources and how does that need change with different portfolios? What electrical characteristics (e.g. ramp rates, regulation speeds) are needed in what quantities? Are these needs location specific?
- How does the potential retirement of major resources (e.g. once-through-cooling, nuclear) change the resource needs?
- How can reliability needs be balanced against costs while also creating opportunities for achieving economically efficient outcomes?

2. What mix of resources minimizes cost to customers over the planning horizon?
    - Is there a preferred mix of energy-only, fully deliverable resources, and demand-side resources? How does this mix vary depending on the operational characteristics of the resources?
    - Does increased distribution generation reduce overall costs?
    - What synergies exist between generation and transmission resources, and between different types of supply resources that can be used to limit overall costs?

VII. 2012 Scenarios

The decision of which scenarios to include in the LTPP requires determining which scenarios best reflect the goals of the proceeding. Resource limitations demand prioritization of scenario modeling in favor of scenarios that can provide actionable guidance to decision makers. To that end, Staff focused on developing three unique scenarios with six distinct sensitivity analyses that further refine the evaluation of potential futures. The scenarios selected are (1) The Base Scenario, which serves as the "control" for our analysis and assumes no major changes to current policies; (2) The No new Demand Side Management (DSM) Scenario, which is similar to the Base Scenario with the exception that it assumes preferred resources (e.g. energy efficiency and demand response) either are not pursued beyond current commitments or do not reach program goals. It, therefore, does not include incremental resources from the State's Loading Order in its projection of future supply and demand; and (3) The High Distributed Generation Scenario, which explores the impact of high levels of distributed generation. A table of the proposed scenarios with the corresponding assumptions is in Section XIV. 2012 LTPP Scenario Matrix.

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The sensitivities explore (1A) the RPS portfolio with high environmental emphasis, (1B and 1C) near-term nuclear retirement, and (1D and 1E) the variability of load growth. Sensitivity 2A reflects Staff's understanding of the California ISO's TPP scenario planning assumptions.

Staff believes that these scenarios will effectively produce information that will be useful to serving California's energy planning needs. These needs are reflected by the two core concerns gleaned from the Assigned Commissioner's Ruling (as denoted in the Building Scenarios questions): (1) Maintaining system reliability given the elevated variability of both load and generation, and (2) The long-term status of the state's nuclear generating facilities.

Some scenarios or sensitivities may have greater or lower priority based on the modeling purposes. For example, a sensitivity of different renewable generation resource locations may have a more significant impact in transmission planning (e.g. power-flow) studies than in operational flexibility studies.

In addition, Staff would like to underscore the importance of aligning scenario planning where possible between the Commission and the California ISO. As explained, Sensitivity 2A specifically aligns with the California ISO's current processes and methods for transmission planning, allowing a point of comparison between the two processes. The California ISO may also find it useful to incorporate some of what is included in the Commission scenarios to the TPP where doing so will be both useful and consistent with California ISO tariff obligations.

Together, these scenarios and sensitivities integrate the uncertain variability of our energy future toward building a coherent body of analyses in the 2012 LTPP that Staff believes upholds the proceeding's ultimate goal of creating plans that ensure a safe, reliable and cost-effective electricity supply in California.[13] For each scenario and sensitivity, Staff provides a "How to get there" explanation that describes at a high level what policies, programs, or outcomes must occur for the realization of that scenario or sensitivity.

[13] Per the Guiding Principles stipulated in the Assigned Commissioner's Ruling on p.8: "Scenarios should be limited in number based on policy objectives that need to be understood inthe current Long Term Procurement Plan cycle." Please note that the upcoming ruling on proposed scenarios set for September 14, 2012 may also add further instruction to the planning scenarios.

VII. a. Renewable Resource Assumptions in All Scenarios

The June 27th Assigned Commissioner's Ruling on Standardized Planning Assumptionsstated an intent to use an estimate of expected renewable supply from the RPS proceeding (R.11-05-005). That ruling also stated that if no viable and appropriate renewable supply estimate emerged from the RPS proceeding in time for inclusion in the planning scenarios, that the 33% RPS Calculator would be used to develop portfolios instead.[14]

Staff and parties have discussed in many forums (e.g. LTPP and RPS workshops and comments) the challenges surrounding the assumption of what renewables supply estimate to use for planning. A basic tension clearly emerges among several goals: transparency, the need for detailed planning information (i.e. transmission planning requires specific resources at specific locations), confidentiality, and the use of the most accurate and current information. Parties have not proposed any workable solution that meets all of these goals nor have they agreed to relax any confidentiality provisions.

Given this impasse, the only option is to use simple, public milestones as a yes/no test to include resources in planning studies and return to using the 33% RPS Calculator. The milestones for the discounted core in Staff's proposed scenarios are: 1) an executed Power Purchase Agreement, and 2) a complete (i.e. data adequate) application for a major environmental permit. This is the same test as used for the renewable resource portfolios in the 2010 LTPP, but reflects a change from the 2012-13 TPP RPS portfolios.[15]

VIII. Scenario 1 – Base

The Base Scenario is designed to reflect the expected future world with little change from existing procurement policies. The Base serves as the point of reference for the rest of the scenarios.

The demand-side assumptions utilize the California Energy Demand Forecasts (CED) to provide the base and incremental values of demand forecasts.[16] To project load in the Base Scenario, the Mid load

[14] Attachment to the June 27th ACR, page 20.

[15] For more information about the 33% RPS Calculator and past RPS portfolios, see: http://www.cpuc.ca.gov/PUC/energy/Procurement/LTPP/LTPP2010/2010+LTPP+Tools+and+Spreadsheets.htmand http://www.cpuc.ca.gov/PUC/energy/Procurement/LTPP/2012+LTPP+Tools+and+Spreadsheets.htm

[16] Base values are those that can be considered wholly in and of themselves without being tied to another forecast, while incremental values are those not embedded in the underlying demand forecast. *See* ACR (R.)12-03-014, p. 10.

forecast, with a 1-in-2 weather peak is assumed. This forecast has 55,951 MW of peak load and 243,362 GWh of annual energy demand in year 2022.[17]

For adjustments to the CED, CEC's estimates of certain incremental resources are included. The uncommitted EE adjustment is derived from the July 2012 CEC Incremental Uncommitted Forecast's incremental EE Mid "savings scenario" value without naturally occurring savings.[18] On August 1, 2012, Staff sent the incremental EE analysis to the R.12-03-014 service list, triggering the seven day comment period.

In the case of demand-side Small PV, the impacts of programs like the CA Solar Initiative are already embedded in the CEC forecast. Accordingly the incremental Small PV identified in this assumption is beyond programs already existing. Staff proposes the Mid assumption for Incremental Small PV[19], which is 1,300 MW beyond what is already embedded in the Mid load forecast, reflecting the increase in Net Energy Metering (NEM) from D.12-05-036.[20]

Like Small PV, some demand-side combined heat and power resources[21] are embedded in the CED forecast. The revised ICF International analysis of Incremental CHP resources serves as the basis for the CHP scenarios.[22] The Base Case assumes no change in net CHP capacity (0 MW nameplate, 75% capacity factor) for both demand-side and supply-side Incremental CHP.

For demand-side Non-Event Based Demand Response, no embedded value is assumed in the Base Case.[23]

[17] ACR (R.)12-03-014, p. 11.

[18] ACR (R.)12-03-014, p. 12.

[19] Small PV is defined as up to 5 MW in AC nameplate capacity. ACR (R.)12-03-014, p. 13.

[20] For more information on Decision Regarding the Calculation of the Net Energy Metering Cap, (D.)12-05-036, *see* http://docs.cpuc.ca.gov/published/Final_decision/167591.htm.

[21] Demand-side Incremental CHP are CHP resources that serve on-site load and not exporting electricity to the grid, while supply-side are those that export electricity to the grid. ACR (R.)12-03-014, p. 13, 17.

[22] To reference ICF International's February 2012 analysis, *see* ICF International, Policy Analysis and 2011-2030 Market Assessment, *available at* http://www.energy.ca.gov/2012publications/CEC-200-2012-002/CEC-200-2012-002-REV.pdf. *See also* ACR (R.)12-03-014, p. 13.

[23] ACR (R.)12-03-014, p. 13.

Resource Additions are treated in the analysis as existing generation. Both Known Additions and Planned Additions shall be used in all scenarios, while assumptions for renewable resources are addressed in their own category.[24]

Given the broad differences in the expected lifetimes among resource types, Energy Division Staff has selected different "expected" retirement frameworks based on resource type, reflected by the Mid assumption for once-through-cooling and "Other" resources and the Low value for Nuclear, Hydroelectric, and Renewable resources. For once-through-cooling (OTC) units, this means that units will be classified as retired by either the State Water Resources Control Board (SWRCB) deadline or the announced retirement date, whichever comes first.[25] Hydroelectric, renewables, and nuclear facilities take on the Low value. Thus, hydroelectric plants and renewables are assumed repowered with electrically equivalent resources at the end of resource life.[26] Also, nuclear units are assumed to be relicensed for continuous operation, with both San Onofre Nuclear Generating Station and Diablo Canyon online and in operation through the planning horizon.[27]

Imports shall be based on the maximum import capability of transmission into the California ISO, as used in the Resource Adequacy program, including expansions identified in the TPP.[28]

For the 33% RPS portfolio assumes the Commercial interest portfolio. This portfolio is designed to be the best forecast of future RPS development using commercial interest as a key selection factor.[29]

As for Incremental Demand Response (DR), the Base case assumes the Mid assumption. The Mid assumption is derived from the values in the IOU's most recent Load Impact Reports filed with the Commission.[30]

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[24] Known additions are resources that have a contract in place, have been permitted, and have construction under way. Planned Additions are resources that have a contract, but have not yet begun construction.ACR (R.)12-03-014, p. 15.

[25] Note that Track II is treated as retirement. ACR (R.)12-03-014, p. 23.

[26] Note that the date of rewinding will reset the retirement timing.*Id.*

[27] ACR (R.)12-03-014, p. 24.

[28] For resources outside of the California ISO, the Transmission Expansion Policy Planning Committee (TEPPC) data should be utilized, specifically the 2022 Common Case generation table. See Data/Surveys" at http://www.wecc.biz/committees/BOD/TEPPC/External/Forms/external.aspx.

[29] ACR (R.)12-03-014, p.20.

<u>How to Get There</u>: *The Base Scenario* requires no change to the business as usual trajectory. All current policies are assumed be maintained or extended with little change in current practices and achieve results consistent with current achievement and forecast expectations.

VIII. a. Sensitivity 1A – Environmental Sensitivity

Sensitivity 1A serves as a "preferred location" portfolio representing a version of future RPS supply that assumes that additional RPS supply will be largely driven by environmental concerns with new RPS resources sited accordingly. The only distinction between this scenario and the Base Scenario is the heavy weight of environmental considerations on the RPS portfolio. However, Staff believes that this distinction affords insight into the transmission impacts associated with different renewable energy sites than the Base Scenario.

The Desert Renewable Energy Conservation Plan (DRECP) anticipates selecting a preferred Development Focus Alternative in the near future.[31] The land area included in the preferred Development Focus Alternative will be targeted for preferred permitting status, a notable incentive in the development process. Other areas may be identified for conservation status, effectively deterring further development. This case represents a significant, near term, policy change to the land use prioritization of the DRECP. This policy change is expressed as a different selection of renewable generation resources in the renewables portfolio, created by a significant weight on the "environmental score" in the 33% RPS Calculator (resources in the DRECP preferred areas receive better environmental scores than resources in other areas).

<u>How to Get There</u>: *Sensitivity 1A* requires that significant changes be made in the immediate future to renewable procurement and permitting decisions. This potentially includes some changes to past decisions. It places a strong emphasis on the DRECP and other preferred locations (e.g. disturbed lands) in renewable generation development.

VIII. b. Sensitivities 1B and 1C – Nuclear Retirement

One of the essential questions facing this LTPP is the long-term status of our nuclear generating facilities. How does the potential retirement of nuclear generators change the system resource need?

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[30] The most current Load Impact Reports are from June 1, 2012. Note that this also includes PG&E's pending peak time rebate program.

[31] For background on the Desert Renewable Energy Conservation Plan (DRECP), *see* http://www.drecp.org/.

Specifically, how can system reliability be maintained with the retirement and/or non-relicensing of some or all of these units?

Sensitivity 1B was developed to explore the implications of various nuclear relicensing and retirement possibilities facing this Commission. For the large IOU-owned nuclear plants, three alternatives were proposed in the ACR's Planning Assumptions. Under the Low retirement scenario, selected for the Base Scenario, both the San Onofre Nuclear Generating Station (SONGS) and Diablo Canyon are assumed online and in operation throughout the planning horizon. In the Mid retirement scenario, the plants would remain in operation until their current licenses expire and then would retire. Under a High retirement scenario, both plants would be retired effective January 1, 2015.

Sensitivity 1B differs from the base solely in which retirement scenario they assume, while holding all other assumptions constant. Sensitivity 1B assumes the a modification of the High retirement scenario with the San Onofre Nuclear Generation Station (SONGS) retired on January 1, 2015 and Diablo Canyon remaining online until relicensing. Alternatively, Sensitivity 1C assumes the High retirement scenario with both SONGS and Diablo Canyon retired on January 1, 2015.

How to Get There: *Sensitivities 1B and 1C* require a policy change to realize the near-term retirement of CA's nuclear generation.

VIII. c. Sensitivities 1D and 1E – Low and High Load Growth

These two cases seek to inform decision makers about the effects of uncertainty in the socioeconomic drivers of the load forecast.

Sensitivity 1D represents a Low load growth future. Given that Low load growth correlates with lower prices and in turn, lower growth in demand-side programs like EE, Staff assumed the incremental values for demand-side effects in Sensitivity 1D to be Low as well. Supply-side Demand Response (DR) is likely less correlated with economic conditions. Therefore, in an effort to show the wide range of variability in load forecasts, Staff assumes High supply-side DR in Sensitivity 1D.

In Sensitivity 1E, on the other hand, Staff looked at the opposite end of the load forecast. Thus, Sensitivity 1E assumes a High load growth future, a High success of incremental demand-side programs, and Low incremental supply-side DR. Therefore, these two sensitivities explore two diverging roads in load growth, economic conditions and supply-side Demand Response.

<u>How to Get There</u>: *Sensitivity 1D* requires enacting policies that foster low load growth, low demand-side reductions, high quantities of DR, and/or low-growth due to economic conditions. *Sensitivity 1E* hinges on a robust economic recovery and/or promoting policies that foster high load growth, high demand-side reductions, and low quantities of DR.

IX. Scenario 2 – No New DSM

Scenario 2, "No new DSM", is designed to project what would happen if the State no longer pursued additional future programs for any resources in the State's Loading Order.[32] Studying this scenario provides policy makers with a worst case scenario of demand side resource achievements and this scenario may illustrate the impact of demand side resource achievements on system needs for other resources.

To create Scenario 2, Staff applied the Commercial case to the projected RPS portfolio. Nuclear generation is assumed online throughout the planning horizon. By 2022, the peak load (net of incremental demand side programs) of Scenario 2 is 4,400 MW higher than the Base with 15,000 GWh more energy consumption. By 2034, the peak reaches 10,700 MW higher with 36,000 GWh greater energy consumption when compared to the Base scenario.[33]

<u>How to Get There</u>: *Scenario 2* requires continuing RPS policy without significant change, while terminating policies relating to preferred resources.

IX. a. Sensitivity 2A – Replicating Transmission Planning Process (TPP) Assumptions

Sensitivity 2A, replicating the California ISO TPP, was created by Staff in order to form a reference point, or point of overlap, between the LTPP and the TPP. Staff has created this sensitivity solely in order to try to match what has been generally utilized by the California ISO in its TPP. By converging the assumptions of the two planning processes in this way, Staff seeks to facilitate the exchange of

[32] For more information on the Governor's Energy Action Plan and the State's Loading Order,*see* http://www.cpuc.ca.gov/PUC/energy/Resources/Energy+Action+Plan/.

[33] Note that these peak load and annual energy consumption values are not based on the most recent incremental resource values from the CEC. Values in the forthcoming Loads and Resources Tables will use the most recent CEC values.

information between the CPUC and California ISO with the ultimate goal of more effectively coordinating generation and transmission resource planning.[34]

The TPP is an annual process. In the most recent TPPs, the CPUC and CEC have provided renewable resource portfolios, a key assumption (e.g. a component of a scenario) to the TPP. The California ISO's TPP has, in the past, differed greatly from the Commission's scenarios, on assumptions other than the RPS portfolios. Note that this sensitivity does not intend to modify the Memorandum of Understanding between the California ISO and CPUC on transmission planning assumptions. Under that Memorandum, CPUC will provide renewable resource portfolios to California ISO for use in the TPP.

This sensitivity is similar to Scenario 2, "No new DSM", except that it utilizes 1-in-5, rather than 1-in-2, peak weather condition and includes a low level of future demand response programs. In this sensitivity, as compared to the Base Scenario, the Mid forecast for energy consumption is used, while applying a 1-in-5 weather year peak to the system. There are limited to no impacts associated with future programs associated with energy efficiency or combined heat and power, but a low level of demand response. The RPS portfolio is the Commercial interest case. Nuclear generation is assumed online throughout the planning horizon.

This scenario departs in a fundamental way from the TPP by introducing retirement forecasts for existing generation based on the Mid values from the planning assumptions. Introducing retirement forecasts is consistent with concerns about future resource availability. By 2022, the TPP scenario has a 7,000 MW higher peak than the Base Scenario, with 15,000 GWh greater consumption. By 2034, the peak climbs to 14,000 MW higher than the Base, with 36,000 GWh additional consumption.[35]

<u>How to Get There</u>: *Sensitivity 2A* is similar to the Scenario 2 in that it entails continuing RPS policy without significant change and terminating policies relating to preferred resources. The primary

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[34] As set forth in the June 27th Assigned Commissioner's Ruling, the CPUC Staff has worked with the California ISO in recent years to develop consistency across the LTPP and TPP processes. CPUC Staff seeks alignment on key planning assumptions and scenarios where possible, while recognizing that the California ISO is bound by its tariff in the development of its planning standards. For information on the California ISO Transmission Planning Process, including the tariff language adopted by the Federal Energy Regulatory Commission and the California ISO Planning Standards documents are available here: http://www.caiso.com/planning/Pages/TransmissionPlanning/Default.aspx. *See* ACR (R.)12-03-014, p. 5.

[35] Note that these peak load and annual energy consumption values are not based on the most recent incremental resource values from the CEC. Values in the forthcoming Loads and Resources Tables will use the most recent CEC values.

distinction is that *Sensitivity 2A* has a higher peak load, but also includes some Demand Response programs.

X. Scenario 3 – High Distributed Generation

The Governor has made the adoption of distributed generation a priority.[36] Staff created Scenario 3 to project the implications of this key state policy of promoting high amounts of distributed generation throughout the system. This future represents a significant change to the pattern of generation and transmission development. Accordingly, Staff believes that this scenario may provide insight to policy makers into the resource needs associated with impacts of changing these patterns.

Scenario 3 applies the High assumption for Small PV, by assuming a full uptake of demand side Small PV. It projects a strong increase in the quantities of Incremental CHP on both supply and demand sides via High assumptions, and a High level of DR. RPS procurement is shifted to High Distributed Generation (from the Base Scenario's Commercial case), while nuclear retirements apply the low assumption with plants assumed online throughout the study horizon.

By 2022, this scenario has a reduced peak demand of 3,100 MW from the Base Scenario. As a whole, energy consumption is 7,000 GWh lower than the Base. Looking forward to 2034, the peak dips 6,800 MW lower than the Base Case and consumption is 17,000 GWh less compared to Base.[37]

<u>How to Get There</u>: *Scenario 3* assumes the aggressive pursuit of CHP, Incremental Small PV, and DR policies. Also, it requires a change to RPS policy, preferring distributed generation resources to central station generation.

XI. Modeling Prioritization

Due to resource constraints and the number of sensitivities and scenarios proposed, Staff believes that scenario prioritization is appropriate. Staff expects that a comment template will be issued that requests feedback from parties in terms of modeling prioritization.

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[36] *See* <u>California's Path to 12,000 Megawatts of Local Renewables</u>, Governor's Local Renewable Power Working Group Conference, Segmenting the Governor's Localized Energy Goal Panel, Discussion Paper #1: http://gov.ca.gov/docs/ec/ConferencePaper_regional_target.pdf.

[37] Note that these peak load and annual energy consumption values are not based on the most recent incremental resource values from the CEC. Values in the forthcoming Loads and Resources Tables will use the most recent CEC values.

XII. The Second Planning Period: Years 11-22

As stated in the June 27th Assigned Commissioner's Ruling, the second planning period (2023-2034) will use simplified planning assumptions. Generally, these assumptions reflect extrapolation of the approaches of the first planning period.

- Net load growth will be maintained as an average, annual compound growth rate from the prior period. The growth rate will be calculated based on net load (i.e. the forecast load, after demand side adjustments such as incremental EE, CHP, etc.), rather than extrapolating individual load or demand assumptions. The formula is:

$$GrowthRate = \left(\frac{NetLoad_{2022}}{NetLoad_{2012}} \right)^{\frac{1}{(2022-2012)}} - 1$$

  Where Net Load is the gross load forecast minus: incremental energy efficiency, incremental small PV, and incremental demand side CHP. This annual growth rate is then applied to the 2022 Net Load to calculate the Net Load for 2023-2034.

- Resource retirements will be calculated based on resource age or other characteristic, as described for the first planning period of each scenario.

- Resource Additions (except renewables) will be calculated based on Known and Planned Additions for all scenarios.

- Imports will be assumed to remain constant from the 2022 value through the second planning period.

- Event-based DR will be calculated using the average, annual compound growth rate from the first planning period. This growth rate will be applied to calculate the value for each year in the second planning period. The same formula described above for the Net Load is used to calculate the growth rate for Event-Based DR.

- RPS resource additions will be calculated using the 33% RPS Calculator based on an assumption of a continued 33% RPS target as follows. The portfolios from the first planning period will be treated as the discounted core. Since current power purchase agreements may not be a good indicator of success during the second planning period for projects that are not included in the portfolios for the first period, only generic projects will be included in the 33% RPS Calculator. For scenarios using the Commercial Interest portfolio for the first planning period, portfolios for the second period will be created using the Cost Score.

XIII. What's Next?

First, Staff will release the renewables portfolios, updated using the assumptions described above and the most recent Project Development Status Report data as soon as possible. Next, Staff will hold a workshop on August 24, 2012 for parties to vet the proposed scenarios. Further guidance may be issued by the Administrative Law Judge or Assigned Commissioner regarding the future schedule. However, for convenience Staff provides the schedule below from the Scoping Memo.

On September 1, 2012, comments from the parties on the draft scenarios are due. The revised scenarios will be issued by Ruling on September 14, 2012, with all comments on any factual errors in the revised scenarios due on October 1, 2012. The Proposed Decision on scenarios will be issued in November 2012. Next, the scenarios will be provided to the California ISO and all other parties by early 2013 for use in operating flexibility modeling. After this modeling assessment is completed, the proceeding makes a need determination and assesses the alternatives for filing any net short. According to the schedule in the Scoping Memo, a need authorization to fill any net short would occur in 2013.[38]

[38] ACR (R.)12-03-014, p. 7.

XIV. 2012 LTPP Scenario Matrix

			Demand					Supply								
	Scenario		**Load**	**Inc EE**	**Inc PV**	**Inc CHP**		**Existing**	**Additions**	**Retirements**	**Solar + Wind & Hydro Retirements**	**Nuclear Retirement**	**RPS**	**Imports**	**Inc CHP**	**Inc DR**
1	Base		Mid	Mid	Mid	Low		Base	Base	Mid	Low	Low	Commercial	Base	Low	Mid
1A	Environmental		Same as Base					Same as Base					**Enviro**	Same as base		
1B	Early SONGS Retirement		Same as Base					Same as Base				**Modified High (2015)**	Same as base	Same as base		
1C	Early Nuclear Retirement		Same as Base					Same as Base				**High (2015)**	Same as base	Same as base		
1D	Low Load		**Low**	**Low**	**Low**	Low		Same as Base								**High**
1E	High Load		**High**	**High**	**High**	Low		Same as Base								**Low**
2	No New DSM		Mid	None	None	None		Same as Base							None	None
2A	Replicating TPP		**Mid (1-in-5 Peak weather)**	Same as No New DSM				Same as Base							None	**Low**
3	High Distributed Generation		Same as Base		High	High		Same as Base					High DG	Base	High	High

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