Renewable Energy Transmission Initiative (RETI)
Criteria for Estimating Need

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Introduction

RETI has estimated the amount of additional electric energy from renewable resources needed by 2020 to meet the state's 33% goal and how much of this energy will require access to the state's high voltage transmission grid. RETI has called the amount of renewable energy needing transmission access the "renewable net short". A summary of the most recent RETI evaluation of the net short approved by the Stakeholder Steering Committee (SSC) January 19, 2010, is shown in the Attachment.

The net short value—52,764 GWh—has been used this year for planning purposes by the CAISO and CTPG.The net short evaluation now needs to be updated and a revised value established for 2011 planning purposes. The California Energy Commission (CEC) has indicated its intention of performing the revision as part of the 2011 Integrated Energy Policy Report (IEPR.) A workshop has been scheduled for December 13, 2010.

This paper discusses the criteria underlying RETI's approach to the net short evaluation. At its December 3 meeting, the SSC may consider revisions to the description of these criteria and a possible recommendation to the CEC that the criteria be used by the CEC as guidelines for future net short revisions.

CEC Demand Forecast and "Uncommitted" Efficiency Savings

As part of its IEPR process, the CEC adopts a demand forecast which projects annual electricity consumption 10 years into the future. In the process, the demand forecast includes estimates of factors—such as demand reductions due to energy efficiency programs—which influence total demand and utility loads. RETI has largely relied on the CEC demand forecast as the underlying basis for its net short methodology.

Historically, the CEC has included only those factors for which programs have been approved or "committed" and which have a track record on which projections can be based. In 2010, however, after the latest RETI net short value was accepted by the SSC, the CEC also adopted a value for "uncommitted" efficiency savings. [RETI refers to this value as "incremental" efficiency savings—see Attachment.] The logic of this decision was that efficiency programs have a long history and it is reasonable to expect that these programs will continue past their currently funded time periods at more or less the same rate. The demand forecast now includes consideration of "uncommitted" efficiency savings.

Additional Incremental Adjustments to the Demand Forecast

As shown by the salmon-colored cells in the Attachment, there are three additional factors which influence the demand forecast and/or the net short estimate which can be described as:

- Incremental Private PV – customer-owned photovoltaic generation in addition to the amount projected in the demand forecast. RETI included an estimate for this value based on the assumption that the state's Go Solar California would reach all its 2016 goals and the rate of installations would continue through 2020. Based on program results to date, this value is in need of further revision.

- Incremental Private CHP – energy from customer-owned combined heat and power (CHP) used by the facility owner.
- Miscellaneous Other Renewable Generation – renewable energy supplied by utilities which does not require transmission access or for which transmission requirements are minimal. An important component of this factor is "distributed renewable generation" (DG) connected to the lower voltage electric distribution system. When RETI accepted the net short estimate, the only approved program was a 500 MW Southern California Edison program. Since that time the CPUC has approved a program of similar size for PG&E.

Various studies have identified the potential for substantial increases in the three factors identified above, in addition to further energy efficiency savings. Opponents of remote, utility-scale renewable projects and/or new transmission facilities have cited this potential as a justification for their opposition. Establishing an appropriate value for these factors can therefore be expected to be controversial. In the interest of achieving the maximum degree of consensus possible, it is recommended that the CEC adopt a set of criteria for appropriate estimation of adjustments to the historical methodology underlying the demand forecast and net short estimate.

Criteria for the Demand Forecast and Net Short Estimate

The goal of the demand forecast and net short estimate is to provide the best possible estimate of what can reasonably be *expected* to occur in the future. Expectations are most reasonable when based on legal mandates or funded incentive programs with clearly identified measures and goals. To the extent that similar programs are in place, projections based on measured program results are most reliable.

These were the guiding criteria underlying the RETI net short evaluation and the CEC's modification of the demand forecast methodology to include uncommitted efficiency savings. They should also be used for other incremental adjustments to the demand forecast and net short estimate in the future.

To summarize:

1. Adjustments to historical demand forecast and net short methodologies should reflect changes which can reasonably be expected to occur.
2. Changes should *not* be expected to occur in the absence of legally binding mandates, approved incentive programs, or other measures designed to produce the changes. Existing programs can reasonably be expected to continue past their current period of authorization.
3. Estimates of changes expected to occur as a result of existing programs should be based on reasonable projections of previous results. Estimates for recently adopted programs for which results are tentative or unknown should be conservative.
4. Net short estimates should be updated annually to reflect changes in the underlying data.

Net Short Attachment

RETI Net Short Calculator

Color indicates potential for user input.

Variable	Variable Name	2020 Value GWh (Note 1)	Description (Note 1)
Electric Energy Services	EnergyServices	343,647	Services provided by electricity and electric efficiency. Calculated as gross generation per 2009 demand forecast , Form 1.2, plus "other" LSE sales, Form 1.1c, not included in Form 1.2 (Note 4)
Incremental Efficiency	IncEff	0	Incremental efficiency savings not included in the 2009 demand forecast.
Gross Generation	GrossGen	343,647	Electric generation required to meet load net of incremental efficiency savings.
Total Private Supply	TotPrivSupply	19,036	Behind the meter private generation, assuming none is sold to LSEs via net metering or other arrangements. Components are assumed to be customer-owned PV and CHP.
Private PV	PrivPV	3,218	PV from CEC Form 1.2, not RPS eligible under current rules.
Incremental Private PV	IncPV	4,140	RETI approved increase to CEC value, 2009 net short update. (Note 5)
Private CHP	PrivCHP	11,677	Non-PV self-generation from CEC form 1.2
Incremental Private CHP	IncCHP	0	Potential Increase in non-PV private supply, eg CHP, above
Net Losses	Losses	25,321	Net Losses = LossFactor*(GrossGen - TotPrivSupply). LossFactor is calculated from Form 1.2 data.
Utility Supply	UtilSupply	299,291	Gross Generation less losses and private supply
Water Pumping	PumpLoad	13,556	Total Pumping Load from Form 1.1c
LSE Retail Sales	RetailSales	285,734	Utility Supply less Water Pumping
Non-RPS Generation	OtherGen	191,442	67% of LSE retail sales
Existing Non-RPS Generation (Note 1)	ExistOther	217,745	Non-renewable generation on line 1/1/2010, calculated as 2009 LSE sales excluding pumping (Form 1.1c) minus existing renewable generation.
Decline in Non-RPS Generation	**FreedFossil**	**26,303**	**Decrease in non-renewable generation requiring transmission 2010-2020, excluding changes in pumping loads.**
33% RPS Generation	RPSGen	94,292	33% of LSE retail sales
Existing Renewable Generation (Note 1)	ExistRenew	38,174	RPS eligible generation on line 1/1/2010 (CEC staff data). (Note 2)
New Renewable Generation	NewRenew	56,118	New RPS eligible renewable generation required to meet 33% goal.
Misc. Other Generation	MiscRenew	3,355	New RPS eligible renewable generation NOT needing transmission expansion, **including RPS elegible renewable distributed generation** (Note 5) and 33% of "other" LSE sales, Form 1.1c. (Note 4)
RETI Renewable Net Short	**NetShort**	**52,764**	**New RPS eligible renewable generation NEEDING transmission expansion.**

Notes for Net Short

Notes
1) All values are 2020 projections except for "existing" resources.
2) Existing renewables as of 1/1/10 include:
31,272 GWh reported in 2008 Net System Power Report
2,533 GWh IOU renewable online since 2008 NSP
2,116 GWh short-term out of state on lines since 2008 NSP
2,253 GWh POU online since 2008 NSP
3) Miscellaneous other renewable generation includes:
1862 GWh Small projects from Phase 1B Report less ocean wave and current projects
876 GWh of utility owned distributed PV (500 MW)
33% of retail sales by "other" LSEs
4) "other" LSEs are:
City of Needles
Mountain Utilities
Pacificorp
Sierra Pacific Power Company
Surprise Valley Electrical Corporation
Trinity Public Utility District
Truckee-Donner Public Utility District
5) Incremental PV is unchanged from 2009 net short update. In addition, 876 GWh (500 MW) is now credited to miscellaneous other generation.