11-IEP-1E
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DATE May 31 2011
RECD. May 31 2011

SIERRA CLUB CALIFORNIA

May 31, 2011

California Energy Commission
Dockets Office, MS-4
Re: Docket No. 11-IEP-1E, 11-IEP-1G
Transmission Planning for Renewables
1516 Ninth Street
Sacramento, CA 95814-5512

Electronically submitted to docket@energy.state.ca.us

RE: Docket No. 11-IEP-1E, 11-IEP-1G
Committee Workshop on Transmission Needed to Meet State Renewable Policy Mandates and Goals, May 17, 2011
Preparation of the 2011 Integrated Energy Policy Report (2011 IEPR)

Sierra Club California appreciates the opportunity to provide comments on this workshop**, Transmission Planning for Renewables,** as an important component of the 2011 IEPR report.

The framework assumption for this workshop appears to be that delay in permitting transmission is a major barrier to meeting the state's renewable energy targets. This point is made in the note at the bottom of the workshop agenda:

> Note: Governor Brown's Clean Energy Jobs Plan states the following: "The [Energy Commission] should 'fast−track' projects based on their anticipated ability to deliver clean energy to market. The permitting time for these projects – which now can take 6 to 8 years – should be dramatically reduced, and in no case be longer than three years." Furthermore, the Plan states, "As Governor, I will ensure that all agencies involved work together with a sense of urgency to permit the new transmission lines without delay."

There appear to be several explicit and implicit mistakes in this analysis regarding transmission, which we attempt to correct in our comments below.

1. Permitting is only part of the process for developing transmission. The governor's position on transmission seems to be based upon confusion between the permitting process and the full amount of time required to plan, permit, design and construct new transmission lines. It can indeed take 6 to 8 years for this *full process* to occur (or longer), but the *permitting time* is only a fraction of the full process.

The term "permitting" is not defined in the Governor's statement, but we assume that this means environmental review through CEQA and NEPA and regulatory review and approval by the CPUC, Publicly-Owned Utilities and the Federal Government.

The initial stages of transmission development involve planning processes that can take at least as long as permitting, and this planning involves multiple stakeholders:

- Transmission line developers—including Investor-Owned Utilities (IOUs), Publicly Owned Utilities (POUs), or private developers of new power lines
- CAISO—the operator of the IOU transmission grid in California
- Western Electricity Coordinating Council (WECC)—an international body that covers 11 western states, 2 provinces in Canada and North Baja in Mexico.

According to the CPUC, the initial planning and preparation by utilities and these agencies can take from 2 to 3.5 years. Final design and construction takes another 1.5 to 2.5 years.

Another time factor for transmission is that developers usually delay constructing their renewable generation projects until the transmission is on-line. After the transmission is built, the CPUC's current expectation is that it will take on average another 18 months to get renewable energy projects on-line. This is significantly shorter than in the past, when projects were found to take 30 months to bring on-line after transmission was constructed.

The CPUC in the 2010 Long-Term Procurement Proceeding (LTPP) provides planning assumptions for transmission projects, which can vary between 57 and 102 months (4.75 to 8.5 years). (Note that planning and review times for Tehachapi, Sunrise, and Devers-Colorado River lines are listed in the table below as 0 because those steps had already been completed at the time of the preparation of this table.) [1]

Table 7. Transmission Development Timing Assumptions, by Schedule Type

Transmission Schedule Type	Transmission Planning by CAISO/ POU/ WECC (months)	Project Description Prep by Utility (months)	CEQA/ NEPA Review by CPUC/POU / Feds (months)	Final Review and Approval by CPUC/ POU/Feds (months)	Final Design and Construction by Utilities (months)	Total (months)
Existing / Distributed	0	0	0	0	0	0
Typical	18	12	24	6	24	84
Typical - Short	12	12	12	3	18	57
Typical - Long	24	18	24	6	30	102
Long-Distance	24	18	24	6	30	102
Tehachapi	0	0	0	6	48	54
Sunrise	0	0	0	0	24	24
Devers - CO River	0	0	0	0	30	30

[1] 2010 Long-Term Procurement Proceeding, Scoping Memo Attachment 2, Standardized Planning Assumptions (Part 2 – Renewables) for System Resource Plans, December 3, 2010, p. 26.

2. Transmission permitting already takes less than 3 years. The Governor's goal is that permitting time "should be dramatically reduced, and in no case be longer than three years." However, this is based upon a misconception: it can be seen in the table that environmental review (through CEQA, NEPA) and approval by lead agencies (POUs, CPUC, Feds) may take as little as 1.25 years, but typically takes 2.5 years. In other words, the governor's target of "no longer than 3 years" for permitting is actually in excess of the norm expected by the CPUC.

The conclusion is evident: reducing permitting time has limited potential for reducing the overall time for developing new transmission and getting new renewable projects on-line.

3. Excessive "streamlining" can cause delay, higher cost, and defective environmental review. If environmental review is pushed through too quickly, this can result in inadequate data collection, limited stakeholder input, weak analysis of impacts, and poor choices for project design. This in turn can cause blowback in the form of public opposition, environmental lawsuits, unforeseen cost escalation, political turf battles, and failure to meet project objectives. Above all, Sierra Club opposes any "streamlining" that would result in inadequate environmental review or outcomes that are contrary to meeting California's renewable energy goals.

An excellent case in point is the fact that currently every American Reinvestment and Recovery Act fast track solar project seeking cash grants is subject to a lawsuit, injunction, or has been recently cancelled (e.g. two Dish Stirling projects and the Ridgecrest solar trough project; see Powers p. 18).[5] The location of these projects on undeveloped public land has been at the center of the controversy. The CEC should restrict its approval for future renewable energy projects only to applications for projects on contaminated or disturbed lands, or retired farmland close to existing transmission lines and transportation corridors. This is the "low conflict areas" approach recommended by PG&E and many major Big Solar developers in a joint letter to U.S. Dept. of the Interior in December 2010 (see Powers p. 25-26).[5] At the same time, the Commission should resist the temptation to hurry up and grab "limited time only" hard sell offers that later lead to buyers' remorse. A more measured approach should be followed; one that maintains a high standard by allowing sufficient time for collecting and evaluating information, and for thoroughly vetting projects with the public and stakeholders. If some projects happen to fall by the wayside, then so be it, the remaining projects will be of higher quality and have more assurance of success.

4. Current options can avoid transmission permitting entirely. The CPUC's Transmission Development timeline also shows that long lead times, including transmission permitting time, can be avoided entirely in certain circumstances. Here is a more extensive list of "zero transmission-permitting time" options:

- Using transmission that already exists and is available
- Building transmission that has already gone through the permitting process
- Building Distributed Generation (DG)
- Purchasing Unbundled Renewable Energy Credits (RECs)
- Reducing demand = less renewable energy needed to meet RPS
- Off-loading dirty power from existing lines & replacing with renewables

These alternatives have huge potential in California.

Three major power lines are seen to have already gone through the planning, permitting and approval process, and have only to be constructed. Approximately 6000 megawatt of approved new transmission lines could be in place in less than four years, the largest being Tehachapi at 4500 megawatts, followed by Devers-Colorado River at 1200 megawatts.

Nearly 3000 megawatts of Distributed Generation is already on the table for the RPS program, and the Governor is proposing 6000 megawatts more. This does not include 3000 megawatts of customer-owned solar which does not directly contribute to the RPS, but that is part of the Governor's 12,000 megawatt Distributed Generation target.

In addition, the new 33% RPS law allows up to 10% of new procurement after 2016 to come from tradable renewable energy credits (T-RECs), which are purchased without taking delivery of the power. Thus they do not need transmission into California. The potential for T-RECs is roughly 2000 megawatts in the state's RPS.

Existing law requires phasing out reliance on coal power. These out-of-state coal plants hog over 3500 megawatts of existing transmission import capacity, and account for about half of the greenhouse gas emissions from California's electric power sector. Replacing this power with renewable energy would cut the state's greenhouse gas emissions while also freeing up 3500 megawatts for importing and moving renewable energy within California.[2]

The options for "zero transmission-permitting time" mentioned here already add up to over 20,000 megawatts, only considering the policy targets that are currently on the table. But this list is far from exhaustive.

Also possible is increasing the capacity of existing or new lines through relatively inexpensive upgrades. CAISO analyzed transmission availability for the CPUC Long-Term Procurement Proceeding, and arrived at an estimate of over 4800 megawatts of "minor upgrades".

E3's analysis for the CPUC shows over 18,000 megawatts of potential for distributed solar PV in California, when the existing 3000 megawatt SB 1 program is included—an additional 6,000 megawatts above the Governor's program target. [3]

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[2] A Preliminary Environmental Profile of California's Imported Electricity, Staff Report, California Energy Commission, June 2005, CEC-700-2005-017, p. 23.

[3] LTPP Solar PV Potential and Levelized Cost of Energy (LCOE), Energy and Environmental Economics (E3), June 18, 2010, Powerpoint table on slide 37.

The following table provides a summary of the alternatives discussed so far:

Renewable Energy Capacity Not Requiring Transmission Permitting

RPS Product Delivery Resource	MW	Comment
Available Transmission	8,000	CAISO - LTPP Estimate
Potential Upgrades	4,850	CAISO - LTPP Estimate
Allowable RECs (est)	2,000	10% of 20,000 MW
DG: IOU DG PV Program	1,050	CPUC Program
DG: CPUC RAM	1,000	CPUC Program
DG: SB 32 Feed-in Tariff	750	500 MW IOUs; 250 MW POUs
DG: New Incremental Target	6,000	Governor's Policy
DG: Additional Potential	6,000	E3 for 2010 LTPP
Offloading Coal	3,500	
Total	**33,150**	

5. The 33% RPS can be achieved without new transmission. The notion that new transmission might be needed for meeting the state's 33% renewable energy target was contradicted by a number of speakers and presentations at the workshop, as well as by CEC and CPUC studies, and the most recent assessment by CAISO.

The CPUC in the 2010 Long-Term Procurement Proceeding developed a sophisticated model to calculate the cost of meeting the 33% RPS. The model included an evaluation of the need for and cost of new transmission to connect renewable projects in Competitive Renewable Energy Zones (CREZs) with load centers. The calculator was used to develop six (6) scenarios for achieving the 33% target by 2020. [4] Of these six scenarios, four did not justify construction of new transmission lines. [5] Only two scenarios out of the six are shown to need new transmission.

Table 12. Scenario Composition, by Transmission Delivery Type

Scenario	Scenario Composition by Transmission Delivery Type (MW)				
	Accomodated on Existing System	Minor Upgrades	New Lines	Out-of-State Undelivered RECs	Total
33% Trajectory	8,517	2,362	3,295	5,093	19,266
33% Environmentally-Constrained	15,327	2,384	-	2,818	20,530
33% Cost-Constrained	8,034	2,661	-	6,798	17,493
33% Time-Constrained	10,291	937	-	8,574	19,802
33% Trajectory - Low Load	8,517	2,362	38	5,093	16,009
33% Trajectory - High Load	8,517	2,362	4,791	5,093	20,763
20% Trajectory	6,446	1,444	-	2,398	10,287

Of particular interest is the "33% Environmentally Constrained" Scenario, which is the only scenario to incorporate the Governor's target of 9000 megawatts of distributed generation. It utilizes 6200 megawatts of existing transmission, and another 2300 megawatts of upgrades. Of the 2818 megawatts of RECs, about 2000 would be allowed in the current RPS law. All together, this would amount to approximately 20,000 megawatts.

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[4] 2010 Long-Term Procurement Proceeding, Scoping Memo Attachment 2, Standardized Planning Assumptions (Part 2 – Renewables) for System Resource Plans, December 3, 2010, p. 32.

[5] One of these four scenarios, the 33% Trajectory – Low Load, required only 38 megawatts of new transmission capacity, likely insufficient to justify construction of a major new transmission line.

The Governor's Plan calling for 12,000 MW of new local renewable generation is quite similar to the 15,000 MW High DG scenario studied by the CPUC.[4] Most of the new transmission assumed to be needed for 33% by 2020 disappears in the High DG scenario (see transmission maps on p. 10 and p. 39 of the Dec 09 Re-DEC presentation[6]). The 2011 IEPR should reflect a reduced role for remote projects, and the lack of need for additional major new transmission lines to interconnect those projects, in light of the Governor's 12,000 MW local renewables target.

Path 46, the high voltage transmission lines passing through the Mojave and Colorado deserts, has over 10,000 MW of capacity and is the most lightly loaded major transmission pathway in the West (see report by Bill Powers, p. 8).[7] The CEC should vet IOU claims that the capacity on Path 46 transmission lines is largely committed to long-term unidentified contracts and therefore not available to move output from new desert power plants. We recommend this analysis as a critical first step before CEC supports any new transmission line to protect ratepayers from paying too much to bring in the power. From an environmental perspective, these contract commitments bind California to importing the most polluting, high greenhouse gas emitting power. The Governor and state agencies need to support implementation of the state's energy and climate policies and seek to retire these contracts as soon as possible so that renewable energy can be delivered over these lines.

6. Least cost alternatives to building new transmission to access out-of-state resources. The 4800 megawatts of "minor upgrades" identified by CAISO are expected to cost $470 million—about $100 per kilowatt of capacity. By comparison, it is estimated the 1000 megawatt Sunrise Powerlink would cost at least $1.9 billion to complete—about 20 times as much as an equivalent amount of upgrades. While Sunrise is particularly expensive transmission, there is considerable financial, as well as environmental, reason to rely on minor upgrades to existing lines to the largest feasible degree prior to considering the construction of new lines, and even more so if those lines are meant to access out-of-state resources as suggested by Black and Veatch and some other parties.

One policy option on the table is using the allowance for unbundled Renewable Energy Credits. Sierra Club has supported a limited role for Renewable Energy Credits, realizing that this could provide the global benefits of increasing renewable energy, allow some flexibility for compliance by utilities, and avoid the need, expense, environmental impact, and delay of building new transmission to access out-of-state renewable energy. RECs can also provide some competitive pressure on renewable energy prices by allowing price signals to cross state boundaries even if there are no transmission pathways to readily deliver the power to California. While California does not yet have a regular market for Tradable RECs, recent prices in Connecticut [8] and New Jersey[9] have ranged from $2 to $4 per MWh. By comparison, RETI's model estimates of transmission costs alone for out-of-state renewables range from $25 to $135 per MWh, including the cost of building and operating transmission infrastructure plus the cost of between 5% and 14% of energy that is lost in the transmission lines due primarily to electrical resistance.[10] For this reason, it is ordinarily far cheaper to purchase conventional "Class I RECs"[11] than to build new transmission to access out-of-state renewables. RECs should be viewed as an "either-or"

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[6] Summary of PV Potential Assessment in RETI and the 33% Implementation, Analysis Prepared by Black & Veatch and Energy and Environmental Economics, Inc. for the Re-DEC Working Group Meeting, December 9, 2009.

[7] Bill Powers, P.E., "California and distributed PV," Report prepared for the GW Solar Institute Third Annual Symposium on April 26, 2011 (available from author: bpowers@powersengineering.com).

[8] http://markets.flettexchange.com/new-jersey-class-i-rec/

[9] http://markets.flettexchange.com/new-jersey-class-i-rec/

[10] CREZ Name and Number. Posted: April 8, 2010 (Excel Spreadsheet), http://www.energy.ca.gov/reti/documents/phase2B/CREZ_name_and_number.xls

[11] Class I RECs are for conventional renewable energy and are contrasted to SRECs which are specifically for solar energy; at $100 to $650/MWh SRECs are much more expensive than Class I RECs or transmission.

proposition with respect to investment in transmission. If new transmission is constructed to access out-of-state renewables, then this added cost will greatly overwhelm any potential financial benefits of RECs.

It is also much less expensive to rely on existing transmission than to build thousands of megawatts of new lines which would cost billions of dollars in upfront capital investment and billions more in financing and operating expenses over their lifecycle. The potential for utilizing existing transmission to deliver renewable energy is very large, with transfer capacity from out-of-state alone being over 18,000 megawatts. [12] A major challenge for renewables is that much of this capacity is taken up by importing coal and nuclear power. On the other hand, reliance on coal and nuclear power can decrease to the extent that California increases its use of renewable energy in excess of the growth in demand, a phenomenon referred to as "offloading" of conventional resources.

In short, building major new transmission lines in California is expensive, and—especially where out-of-state resources are involved— unnecessary for meeting the 33% RPS. The CPUC scenarios showed a range of usage of out-of-state renewables, with a low of 2818 MW and a high of 8574 MW. Using 2000 MW of RECs, retiring 3500 MW of coal, and divesting 1000 MW of out-of-state nuclear power[13], would provide access to 6500 MW of out-of-state renewable resources without building a single new power line. On the other hand, if out-of-state renewables are accessed primarily through building new transmission, and this displaces use of in-state renewables, expanding import capacity beyond the current 18,000 megawatts would enable continued reliance of out-of-state fossil fuel and nuclear power. The state's environmental commitments would be best met by pushing dirty power off of these lines and replacing that with renewable energy, especially given the fact that imported electricity contributes half of the greenhouse gas emissions in the electric power sector.

A further alternative to building new transmission for accessing out-of-state renewables is to adopt and meet the Governor's proposed 12,000 MW goal for distributed generation. The RETI database shows that while out-of-state solar photovoltaic energy costs 16 to 17 cents/kWh at the generator, this cost increases to 19.5 to 22.5 cents/kWh delivered to a California load center substation. Out-of-state solar thermal power ranges from 24 to over 30 cents/kWh delivered to a load center. The E3 Powerpoint from June 2010 showed distributed photovoltaics costing between 16.8 cents/kWh and 29.0 cents/kWh. It is noteworthy that the range of cost for distributed solar PV matches quite well the range of cost for out-of-state solar generation provided by E3.

On the other hand, it is very likely that smaller scale distributed solar PV will continue to decrease in price. The E3 model assumed an installed price of $5/watt-dc for projects of 500 kW to 2 MW, while the 2009 reported average cost for residential rooftop PV in Germany was reported by LBNL to be only $4.70/watt-dc[14]—in other words small 4 kilowatt residential PV systems in Germany cost less per watt than 1 megawatt PV systems in California. This is a function of the much larger market scale in Germany as well as the regulated price paid for solar electricity in the feed-in tariff program. If California adopted such policies, it is likely that we could also reduce the price of solar PV systems.

7. CPUC & CAISO forecast of need for new renewables is high. The CPUC baseline assumption for how much additional renewable energy is needed for meeting the 33% RPS—the Renewable Energy Net Short— is 54,269 GWh/yr, while the "high load" sensitivity case is 62,957 GWh/yr. These values

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[12] LBNL reported in 2003 that California had 18,170 megawatts of import capacity on existing lines. http://certs.lbl.gov/pdf/ca-grid-plan.pdf

[13] PNM shows California interests holding 27.4%, or 1044 MW out of Palo Verde nuclear plant's 3810 MW. http://www.pnm.com/systems/pv.htm

[14] Tracking the Sun III: The Installed Cost of Photovoltaics in the US from 1998-2009, Barbose, Darghouth & Wiser, Dec. 2010, LBNL, p. 18.

are likely to be too high; which implies that the assumed need for about 20,000 megawatts of renewable generation capacity to meet the 33% RPS may also be too high. The CPUC also has a "low load" sensitivity case of 45,581 GWh/yr, which is certainly more in line with CEC estimates of the net short in the context of meeting state policy targets.

The value for the Renewable Energy Net Short (52.8 TWh/year) presented by Neil Millar of CAISO[15] was the near the highest case in the analysis prepared by CEC staff and presented on March 8, 2011, by Angela Tanghetti[16]. This CEC analysis presents in Table 7 on p. 30 the following range of values for the estimated Renewable Energy Net Short in 2020:

Lowest:	28.1 TWh per year
Mid-Range:	42.7 TWh/yr
Highest:	53.2 TWh/yr

The highest value is based on a number of assumptions:

a. Retail sales higher than CEC projected
b. Zero additional rooftop PV
c. Zero additional combined heat and power facilities
d. Low estimate of current instate renewable generation

The CEC Mid-Range value of 42.7 TWh appears most consistent with state policy goals and CEC forecasts. However, the number presented on by CAISO of 52.8 TWh/year, is 10.1 TWh/year more than the Mid-Range value projected by CEC. We request that CAISO & CPUC use current CEC forecasts for the net short, and work with the commission to achieve consensus between the agencies on assumptions, methodology and forecasting.

8. CAISO may already be approving excessive transmission. The updated approval status of transmission capacity was also presented on in Neil Millar's PowerPoint[17] showing that the renewable potential approved by the CAISO Board or LGIA pending approval by SCE (which is highly likely) totals 22,350 MW or 56.8 TWh/year, which is 4 TWh/year more than the extreme value of the forecast presented. (Note that item 12, Path 42 was approved by the CAISO Board on May 18, 2011.) California will have more transmission capacity than is needed to meet the 33% RPS, in advance of the 2020 target year. The potential for delivering energy could exceed what is needed by 4 TWh/yr to 24.7 TWh/yr, according to the recent CEC net short forecast.

All 12 transmission upgrade projects (totaling $7.2 billion) presented in CAISO's Powerpoint are scheduled to be online by 2018, which is two years ahead of the RPS due date of 2020. Thus it is clear that there is no documented need for the statement in #1 above that "The permitting time for these projects – which now can take 6 to 8 years – should be dramatically reduced." Clearly, California is already on track for much more transmission than is needed for 33% RPS by 2020.

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[15] Neil Millar, California ISO, PowerPoint presented at the IEPR Committee Workshop, Transmission needed to meet State Renewable Policy Mandates and Goals, May 17, 2011, (downloaded from: http://www.energy.ca.gov/2011_energypolicy/documents/index.html#05172011).

[16] Alvarado, Al, Ivin Rhyne. 2011. *Proposed Method to Calculate the Amount of New Renewable Generation Required to Comply With Policy Goals*. California Energy Commission, Electricity Supply Analysis Division. CEC-200-2011-001-SD (downloaded from: http://www.energy.ca.gov/2011_energypolicy/documents/index.html#03082011).

[17] "Transmission underway to meet 33% RPS in 2020", May 17, 2011, Slide 9.

Millar's Slide 5 mentions 32 "Reliability Projects totaling $1.2 Billion." It is not clear whether these are regarded by CAISO as increasing transmission capacity. We request CAISO to explain in detail the additional transmission capacity expected in Southern Orange County and other projects, and why this additional capacity should not be added to the 56.8 TWh/year capacity increase on Slide 9.

Although it was ignored in the CAISO "Hybrid Case," one of the planning scenarios from the current Long-Term Procurement Proceeding[3] shows the Governor's Clean Energy Jobs Plan, which includes 9,000 megawatts of new, distributed generation as part of the utility renewable program. (The full distributed generation program is planned to be 12,000 megawatts, but 3,000 megawatts is planned to be customer-owned, which reduces demand, but does not contribute to utilities' renewables requirement.) As shown above in our point # 5, LTPP Table 12 shows renewables that can be delivered over existing capacity and how much new capacity is needed.[18] Out of seven scenarios, only two require new lines, and that is mainly because they fail to meet the Governor's target for building 9,000 megawatts of new distributed generation, none of which requires new transmission lines.

It is our understanding that CAISO has already incorporated 16,000 MW of interconnection studies in the identification of transmission needed to support meeting the 33% RPS goals.[19] Since another 7,000 MW of interconnection studies are expected to be completed this year, a total of 23,000 MW of renewable capacity will be accounted for in the ISO balancing authority area. Note that this is 288% of the 8,000 MW of central station renewables called for in Governor Brown's Clean Energy Jobs Plan, and alone provides more than enough capacity to meet 100% of the RPS net short, without any of the 12,000 MW of DG called for in Governor Brown's Clean Energy Jobs Plan.

Concluding Comments

It is great that California is leading the nation on an ambitious Renewables Portfolio Standard of 33% by 2020. However, this should not lead California to build expensive new transmission to bring in out of state renewables, when the state can easily produce 100% of its own renewables, in most cases, at less cost after accounting for building the transmission to bring in out of state renewables. In addition, climate change is not just California's problem, and all neighboring states have adopted their own renewable energy programs. These states will need to increase their <u>own</u> use of renewables. If they export all their lowest cost green energy, it will make achieving their renewable programs less economical and put the achievement of their targets at risk.

Several speakers at the workshop said, "The goal is not to stop at 33% renewables in 2020, but to go on to more." In fact, the previous Governor's Executive Order S-3-05 states that California's goal is for an 80% GHG emissions reductions by 2050. This implies that we should lay out an orderly plan for conversion to 100% renewable electricity generation, since electricity is easier to convert to renewables than some other sectors and increasing electrification of transportation is likely.

The implication that some seem to draw from the idea of moving to higher levels of renewable energy is that this will require additional transmission. While there may be some need for that, it is likely to be far less than would be initially assumed. Removing fossil fueled generation will free thousands of megawatts of transmission for renewables. The CEC and CAISO need to do a detailed analysis of the impact of the replacement of the fossil fueled generation currently occupying many of those lines, as this is one critical calculation that is not part of the renewables net short calculation. Black & Veatch[7] pointed out an example of SCE having additional transmission capacity from retiring Mohave and Four Corners coal

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[18] Standardized Planning Assumptions (Part 2 – Renewables) for System Resource Plans, CPUC Staff, December 2010, Ref. # R.10-05-006 MP1/VSK/PVA/oma

[19] Draft California ISO 2010/2011 Transmission Plan, March 24, 2011, approved by CAISO Board on May 18, 2011

plants, but the state's carbon standard for electricity will result in retirement of all the current out-of-state coal contracts.

The CEC's net short report points out how current studies are not properly accounting for the state policies and programs for reducing energy consumption.

> A number of current electricity infrastructure studies do not consider the potential implications of these load reduction programs. Consequently, these studies likely overstate the amounts of renewable energy needed to satisfy the policy goal. [20]

Planning agencies need to work more closely with each other to arrive at a more accurate assessment of the variety of demand reduction programs in California. It is quite possible that if all the lines reported by Millar are built, excessive transmission will unnecessarily increase the cost and environmental burden of our conversion to renewable energy.

Thank you for your consideration

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[20] PROPOSED METHOD TO CALCULATE THE AMOUNT OF NEW RENEWABLE GENERATION REQUIRED TO COMPLY WITH POLICY GOALS, Al Alvarado and Ivin Rhyne, California Energy Commission, March 2011, CEC-200-2011-001-SD, p. 31. http://www.energy.ca.gov/2011publications/CEC-200-2011-001/CEC-200-2011-001-SD.PDF