



CAISO 2015-2016 Transmission Plan Comments from Natural Resources Defense Council

Thank you for the opportunity to comment on the CAISO 2015-2016 Draft Transmission Planning Process. This planning process is integral to developing the low carbon electric grid of the future, and to ensuring reliability of that grid. The most recent version of the planning process incorporates and addresses many of our concerns. We support the general direction of this plan, and recommend the CAISO change the plan per our suggestions below.

The Natural Resources Defense Council (NRDC) is a national, non-profit organization of scientists, lawyers, and environmental specialists, dedicated to protecting public health and the environment. Founded in 1970, NRDC serves more than one million members, supporters and environmental activists with offices in New York, Washington, Los Angeles, San Francisco, Chicago and Beijing. NRDC has a long history of efforts to protect and conserve the nation's natural systems that support human prosperity, including in particular the nation's air, water, lands and other natural resources. NRDC has long promoted the reliance on cost-effective resources, like energy efficiency and renewable energy, in order to reduce costs and environmental impacts while meeting customers' energy needs.

CAISO: “As a result, areas outside the ISO that are rich in renewable energy potential and have been included in the ISO's 33% supply portfolios, have raised concerns that they will be unable to develop their projects if they are unable to offer RA capacity to their potential LSE buyers. The ISO therefore also includes, in each TPP cycle, the policy objective of expanding RA import capability in those areas outside the ISO BAA where (a) renewable resources are needed in the 33% RPS base case portfolio meet the state's 33% RPS target,

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and (b) the RA import capability is not sufficient to enable these resources to provide RA capacity.”

Comment: This change to consider renewable resources outside the CAISO footprint is a welcome change. It is critical to look at the grid in both a local and regional perspective. As we learned from the study, *investigating a Higher Renewables Portfolio Standard in California*, conducted by the consulting firm Energy and Environmental Economics, Inc. climate solutions focusing on a single state, California, inhibit our ability to cost-effectively integrate renewable energy sufficient to meet long term climate goals absent coordination among states; taking advantage of diverse geographies and technologies; and, gaining access to new markets and market tools. We believe planning should be realigned to emphasize longer term system and climate mitigation needs and goals, respectively. Ideally this planning should be collaboratively and contemporaneously done by all three major California energy and transmission planning and regulatory entities (see attached comment on realignment).

CAISO: “During the 2015-2016 TPP cycle the ISO will seek to continue to work with the California Transmission Planning Group (CTPG) to coordinate with CTPG members as to their plans within their respective areas. While the CTPG has put further analytical studies on hold as the various regions establish their new roles and procedures to comply with FERC Order 1000 regional and interregional obligations, the ISO anticipates that CTPG will continue to play a role in the coordination and sharing of planning activities being conducted by CTPG members inside California.”

Comment: We believe this would be a very positive development as the CTPG is the main venue in which both public and private utilities look at the California electrical system together. If the CTPG reconstitutes itself, then NRDC believes that the meetings should be open and transparent along the lines of ISO protocol and regional Order 1000 transparency. This group and its reports should be made public in the greater interest of reliability.

CAISO: Section “4.6 Study Scenarios”

Comment: Study scenarios should consider and where appropriate include study results emanating from WECC interconnection-wide planning, especially where out of state resources of interest and value to California are implicated.

CAISO: Section “4.8 Base Case”

Comment: NRDC is pleased to see CAISO using the WECC base case.

As mentioned above, NRDC believes the portfolio-based planning process and transmission planning horizons at CAISO should be reformed to address longer-term policy goals and system needs.

CAISO Table:

Table 4-15: Storage Operational Attributes

Values are MW in 2024	Transmission-connected	Distribution-connected	Customer-side
Total Installed Capacity	700	425	200
Amount providing capacity/ ancillary services	700	212.5	0
Amount with 2 hours of storage	280	170	100
Amount with 4 hours of storage	280	170	100
Amount with 6 hours of storage	140	85	0

Comment: Since the assumption of storage attributes are “admittedly conservative”¹ we recommend that the transmission

¹ R1312010 Picker Ruling 2-27-2014
ATTACHMENT “Planning Assumptions and Scenarios for use in the

planning process also evaluate scenarios in which distributed and behind-the-meter storage is able to provide a fuller suite of electrical services similar to that of transmission-connected storage. This “advanced policy” scenario would provide information as to the potential of unlocking that remaining storage capacity through policy innovations.

CAISO: Section 4.17 Demand Response Programs and Energy Storage

According to tariff Section 24.3.3(a), the ISO sent a market notice to interested parties seeking suggestions about demand response programs and generation or non-transmission alternatives that should be included as assumptions in the study plan. In response, the ISO received demand response and energy storage information for consideration in planning studies from the following:

- California Public Utilities Commission (CPUC)
- Pacific Gas & Electric (PG&E)

Comment: Did the CPUC submission cover all the IOUs and PG&E submitted additional information? This needs to be clarified. Will they be required to submit data before the next study publication? It seems the study analysis will be inaccurate if the data from the entire CAISO footprint is not included.

CAISO: The 2012 LTPP Track 4 planning assumptions estimated that approximately 200 MW of DR would be available to mitigate first contingencies within the combined LA Basin and San Diego local reliability areas by 2022. The 2014 LTPP planning assumptions, however, estimates that approximately 1,100 MW would be available to mitigate first contingencies within the combined LA Basin and San Diego local reliability areas by 2024. CPUC staff developed this latter estimate by screening DR projections in the Load Impact reports for programs that deliver load reductions in 30 minutes or less from

CPUC Rulemaking R.13-12-010 (The 2014 Long-Term Procurement Plan Proceeding), and the CAISO 2014-15 Transmission Planning Process”.
http://www.cpuc.ca.gov/NR/rdonlyres/589B90C6-DC13-47E0-89D5-6448BAE8A725/0/AmendedAttachment022714_ACR.pdf

customer notification. The table below identifies for each IOU the programs and capacities that meet this criteria.

CAISO: Table 4-13: Existing DR Capacity Range in Local Area Reliability Studies

“Fast Response” DR Program MW in 2024	PG&E	SCE	SDG&E
BIP			
API			
AC Cycling Residential	287 n/a 82 1	627 69 298 76	1 n/a 12 3
AC Cycling Non- Residential			

Given the uncertainty as to what amount of DR can be relied upon for mitigating first contingencies, the CAISO’s 2014-2015 TPP Base local area reliability studies examined two scenarios, one consistent with the 2012 LTPP Track 4 DR assumptions and one consistent with the 2014 LTPP DR assumptions. The ISO will examine the same two scenarios in the 2015- 2016 TPP.

DR capacity will be allocated to bus-bar using the method defined in D.12-12-010, or specific bus-bar allocations provided by the IOUs. The DR capacity amounts will be modeled offline in the initial reliability study cases and will be used as potential mitigation in those planning areas where reliability concerns are identified.

Comment: This allocation methodology sounds reasonable, and NRDC looks forward to more dialogue describing the scenarios in the next report.

CAISO: 6.1 50% Renewable Energy Goal for 2030

During the current planning cycle the ISO will perform a special study to provide information regarding the potential need for public policy-driven transmission additions or upgrades to support a state 50% renewable energy goal. The ISO is performing this study for information purposes only; its results will not be used to support a need for policy-driven transmission in the 2015-2016 planning cycle. As of the date of this draft study plan, the 50% renewable energy goal has been announced by Governor Brown but is not yet a formal state

requirement, so in accordance with the ISO tariff the ISO cannot use it as a basis for approving policy-driven transmission.

Comment: NRDC applauds the ISO for taking the initiative to conduct a special study analyzing the needs of a 50% RPS. While it is an informational study, we support the ISO taking these first steps in collaboration with the CPUC. We look forward to discussing the preliminary results in November 2015.

CAISO:

Table A1-4: Existing generation plants in VEA planning area

Planning Area	Generating Plant	Maximum Capacity
VEA	Not Applicable	0
	VEA Area Total	0

Comment: Why are there no existing generation plants in the VEA area in the current ISO model?

Thank you for this opportunity to comment, and please let us know if you have any questions.

Respectfully Submitted,

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**Comments of the Natural Resources Defense Council (NRDC) on the
2015 CAISO Transmission Plan**

Submitted by: Carl Zichella

I. Introduction:

NRDC supports a realignment of transmission planning in California to address both near and long term climate change, renewable energy integration and reliability needs. We have submitted comments to the current California Energy Commission Integrated Energy Policy Report, and the California Public Utilities Commission RPS calculator proceeding explaining our views on this subject. These comments are intended, for consistency's sake, to inform this and future transmission plans developed by the CAISO.

We believe meeting state climate mitigation targets will require the state and its agencies to consider a greater variety of goals and objectives than the current portfolio based approach which artificially delays or even prevents the development of high-value renewable energy resource areas in California, in particular the San Joaquin Valley. The current approach does not best utilize the state's planning capacities to most efficiently meet the state's financial, environmental, and social goals. NRDC believes that bundling together projects into portfolios for transmission planning, is inadequate for long term planning needed to meet state goals in the least environmentally harmful ways. Realignment in how California plans and executes generation and transmission planning is needed.

We instead recommend a master planning approach that identifies transmission lines with multiple values.

II. **MISO Multi-Value Lines**

- Meet state and national policy objectives such as:
 - Reduces greenhouse gas emissions, reduces air pollution, relieves congestion, enhances reliability, facilitates variable generation integration and supports economic development in targeted communities.
- Serve present and planned future renewable energy zones

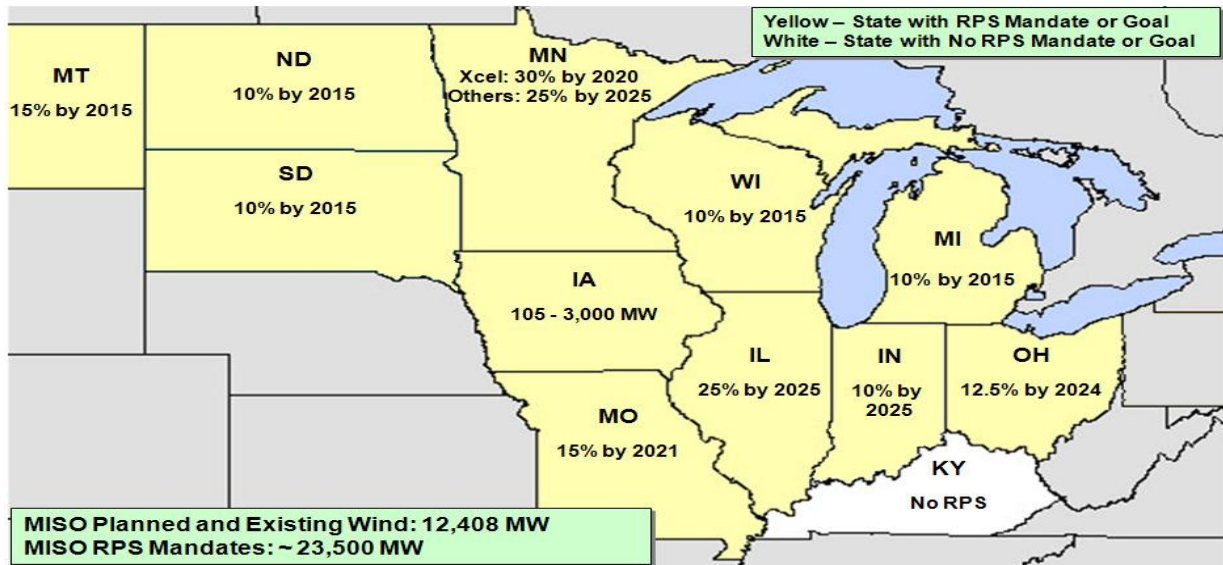
- Can be expanded (adding a circuit, reconductoring or increasing the transfer capacity (ATC) with more efficient conductors, etc.) within existing corridors to facilitate rapid and strategic expansion
- Minimize land use, cultural and wildlife conflicts
- Provide access to constrained grid assets that help optimize grid operations (such as pumped hydroelectricity storage)
- Provide access to regional renewable resources with uncorrelated variability to California resources (geographic diversity as an integration strategy)
- Support regional grid coordination and sharing of reserves
- Enhance system reliability
- Improve power flows
- More efficiently utilize the existing transmission system and avoids environmental conflicts.

This approach is modeled after one utilized by the Mid-Continent Independent System Operator to identify and build transmission with multiple values to more easily integrate renewable (mainly wind) energy into their footprint. Our recommendation also builds on the original goals of the Renewable Energy Transmission Initiative (RETI) which sought to “meet California’s renewable energy goals most cost effectively, with the least impact to the environment, in a reliable manner.”

The rationale for the MISO approach is described as:

Public policy decisions over the last decade have driven changes in how the transmission system is planned. The recent adoption of Renewable Portfolio Standards (RPS) and clean energy goals across the MISO footprint have driven the need for a more regional and robust transmission system to deliver renewable resources from often remote renewable energy generators to load centers.¹

¹ See: Multi Value Project, Portfolio Results and Analyses, MISO, January 10, 2012 for a full description of the drivers, proposed lines and related analysis.



MISO states with RPS mandates and goals, Multi Value Project, Portfolio Results and Analyses, MISO, January 10, 2012

The MISO approach identified lines which met financial, policy, and system reliability needs, identified as:

- Provide benefits in excess of its costs under all scenarios studied, with its benefit to cost ratio ranging from 1.8 to 3.0.
- Maintain system reliability by resolving reliability violations on approximately 650 elements for more than 6,700 system conditions and mitigating 31 system instability conditions.
- Enable 41 million MWh of wind energy per year to meet renewable energy mandates and goals.
- Provide an average annual value of \$1,279 million over the first 40 years of service, at an average annual revenue requirement of \$624 million.
- Support a variety of generation policies by using a set of energy zones which support wind, natural gas and other fuel sources

Metrics similar to these but based upon California's specific needs could provide a foundation for a multi-value master planned approach in this state.

A master planning approach would consider values beyond the purely electrical system needs traditionally utilized by the CPUC to justify the need for new transmission. These help identify and prioritize present and future competitive renewable energy zones for transmission service and could include such things as:

1. Economic development and job creation in financially distressed part of the state

2. Facilitating renewable energy development on chemically altered and marginally productive agricultural lands being retired from cropping, such as those in the west side of the Westlands Water District
3. Concentrating renewable energy development on the least environmentally sensitive lands
4. Reducing water consumption by retiring irrigated, chemically altered, and marginally productive agricultural lands.
5. Planning for the long term conservation of other prime farmlands
6. Avoiding impacts to and preserving cultural resources

Master planning takes a longer term view than is characteristic for transmission planning where three to five year looks-forward are more the norm in California. However, California's climate goals (80% reduction in GhG emissions from 1990 levels by 2050), which will require a fundamental restructuring of the electrical sector, requires flexible planning for more than 30 years into the future. While it is impossible to predict with certainty what electricity generation and load should look like in 2050, by planning to serve present and future renewable energy zones, new transmission lines or upgrades can be scaled to meet California's zero emission needs under a variety of plausible futures. In so doing we can design a transmission system that is not just least cost, but *best fit*, in the sense that the developments made could be used to support expansions in renewable power generation *where* we want it (least environmentally sensitive locations), *when* we need it, without having to identify, permit and construct duplicative or unnecessary rights of ways and transmission lines.

III. RETI 2.0

RETI's original concept was to identify development areas called Competitive Renewable Energy Zones (CREZ) which had both excellent resource values and very low environmental impacts to both attract development and to ease and accelerate the permitting for siting and development timelines respectively. Once zones were identified transmission upgrades and additions were identified to serve the zones. Many of these improvements are under development or active consideration today, though official plans of service for the CREZ were

never produced. This was the first planning initiative to ever place economic and environmental objectives on equivalent planes.

RETI was a thoughtful approach to the orderly development of the generation needed to meet California's Renewable Portfolio Standard goals. The RETI approach remains valid and could be a useful model for a master planning approach for renewable energy and transmission development into the future. The CREZ approach was the model for the establishment of the BLM solar energy zones across six states, the BLM Arizona Restoration Design Energy Project, and the development area identification process in the federal-state Desert Renewable Energy Conservation Plan (DRECP). The Western Governors Association led a renewable energy zoning exercise that identified renewable generation "hubs" for the purpose of evaluating regional transmission needs. WECC uses a similar geospatial analysis to inform transmission planning and routing².

NRDC believes applying this zoning-transmission-planning paradigm to identify future needs would make more efficient, cost effective and environmentally acceptable renewable energy development available in a timely way, to incentivize it in the right places and do so at the lowest cost to California consumers.

Master Planning Zones and Transmission

Using geospatial information in a RETI-like analysis to identify additional CREZ, especially in the San Joaquin Valley on retired agricultural land, and then performing CEQA and NEPA analysis and permitting on these lands could greatly enhance the original RETI concept. Areas which have already been subject to environmental review, and for which mitigation burdens were known in advance (if required at all) would be highly desirable for developers. The greater certainty that projects could be quickly brought on line, and that transmission would be made available in a timely way should greatly enhance access to low cost project financing. This in turn enables generators to bid into RFOs at lower costs. By planning transmission such that its

² For information on the geospatial land classifications datasets in the EDTF tool go to http://www.wecc.biz/committees/BOD/TEPPC/Pages/EDTF_Datasets.aspx. These resemble RETI mapping results.

transfer capacity can be expanded, these future CREZ can be served at least cost to consumers and reduce power costs for procuring entities.

IV. Master Planning Key Questions

1. Is the proposed CREZ on chemically altered, marginally productive farmland (or other brownfield redevelopable site) scheduled for retirement?
2. Is the proposed CREZ located along a logical transmission corridor or existing ROW?
3. Can the proposed CREZ produce a significant amount of renewable generation?
4. Has the proposed CREZ been identified by the Nature Conservancy's [Western San Joaquin Valley Least Conflict Solar Energy Assessment](#) as an area of low environmental conflict?³
5. Does this location offer the potential for in-state or regional geographic diversity in the generation mix?
6. Will transmission to this CREZ improve power flows on the grid enhancing regional (WECC-wide) coordination opportunities?
7. If new transmission is needed, what voltage rating should be required to meet the expected renewable generation potential for this CREZ?
8. Will development in this CREZ facilitate associated state goals (such as economic development and job creation)?
9. Would transmission for this CREZ provide better utilization of energy storage or other integration resources?
10. Would transmission for this CREZ reduce system congestion and/or provide additional reliability benefits?
11. Could transmission for this CREZ if expanded also serve a future CREZ?

V. NRDC Recommendation: Align agency planning processes to prioritize transmission to new and existing CREZ/DRECP/BLM solar zones.

NRDC believes that California transmission planning realignment should prioritize the planning and approval for transmission projects that meet multi-value tests and serve Identified present

³ The Nature Conservancy has done a thorough habitat review of the San Joaquin Valley and this authoritative work can be used to guide suitability analyses for CREZ.

and future CREZ, BLM solar zones, and DRECP resource areas. Focusing on transmission that serves broader system benefits and opens new high priority, low-conflict areas and which meet present and expected future greenhouse gas reduction and reliable electricity supply should be the method we use going forward. Aligning how the agencies coordinate to identify these CREZ and their transmission solutions should be a high priority. NRDC would prefer to see a more unified approach rather than the planning hand-offs we currently see in the project portfolio approach we now use. We greatly appreciate the increased level of coordination between the CPUC, CEC and CAISO we have seen in recent years. We also believe this can be improved upon and simplified by using the master planning, multi-value transmission approval process we have outlined above.