



October 8, 2020

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**California Independent System Operator
250 Outcropping Way, Folsom, CA 95630**

Re: 2020-2021 Transmission Planning Process (Presentation September 23-24, 2020)

Request for Study of Pacific Transmission Expansion Project (PTEP) as an Alternative to LCR Capacity in the 2030 LT LCR Study

At the 2020-2021 Transmission Planning Process Stakeholder Meeting on September 23-24, 2020, the CAISO invited stakeholders to submit alternatives related to local capacity technical studies along with stakeholder comments by October 8, 2020. Accordingly, Western Grid Development LLC (“Western Grid”) is pleased to submit the **Pacific Transmission Expansion Project (“PTE” or “PTEP”)** as a potential alternative to reduce or eliminate the gas-fired generation for targeted LCR areas and sub-areas, provide incremental LCR and assist in achieving goals established by Senate Bill 100.

In the previous and current TPP cycles Western Grid has requested CAISO to study the PTEP as an economic project. The PTEP is a 2,000 MW controllable HVDC subsea transmission cable with four Voltage Source Converter stations connecting Diablo Canyon switchyard to Goleta, Redondo Beach and Huntington Beach substations in Southern California. The project cost is estimated at \$1,850 million. In the 2019 – 2020 Transmission Plan¹, the CAISO determined that the PTEP will increase capacity on the existing CAISO grid to allow transfers of available resources from the Diablo Canyon 500 kV switchyard to the three southern terminals including a 500 MW terminal connecting to the Goleta substation in the Big Creek–Ventura areas. The CAISO concluded that PTEP would reduce LCR requirement in the Big Creek–Ventura area by 393 MW thus reducing the reliance on 393 MW of gas-fired generation. The same analysis concluded that the PTEP reduces the Western LA Basin LCR requirement for by 1,889 MW thereby allow 1,889 MW of reduction in gas-fired generation. However, at the same time, the CAISO showed an increase in LCR for Eastern LA and San Diego LCR by 149 MW and 140 MW respectively².

The net LCR reduction for LA Basin and Big Creek-Ventura areas was determined by CAISO to equal 1,993 MW of local capacity. The Net LCR Benefits (net decrease in cost) has a present value of \$463 to \$628 million. However, production costs (or energy costs) increase by a present value of \$117 million, thus

¹ <http://www.caiso.com/Documents/ISOBoardApproved-2019-2020TransmissionPlan.pdf>

² Table 4.10-59



CAISO concluded the PTEP project benefits ranged from \$346 to \$511 million, which resulted in a benefit to cost ratio below 1.0.

Western Grid requests that CAISO consider an enhanced alternative option for PTEP for purposes of evaluating transmission alternatives for the 2030 LT LCR study to be included in the 2020-2021 TPP. We have performed initial assessment and our studies indicate that two project configurations provide substantial benefits:

Option 1: PTEP provides 2,000 MW into Big Creek/Ventura and LA Basin by injecting up to 500 MW at Goleta, 1000 MW at Redondo Beach and 500 MW at Huntington Beach.

Option 2: PTEP provides 2,000 MW into Big Creek/Ventura and LA Basin and by injecting 500 MW at Goleta, 500 MW at El Segundo, 500 MW at Huntington Beach and 500 MW at San Onofre.

- a. We request the CAISO evaluate both Option 1 and Option 2 as alternatives for meeting local LCR needs and calculate the amount of LCR reduction under both Option 1 and 2 in Big Creek/Ventura, LA Basin, and San Diego/Imperial Valley for the 2,000 MW injection.
- b. Evaluate both PTEP Option 1 and Option 2 as transmission options that, combined with storage, could eliminate, or materially reduce gas-fired generation in targeted areas and subareas. The analysis should strive to find a desired mix of in-basin batteries plus new transmission to out-of-basin resources that can materially reduce or eliminate the need for in basin gas-fired generation.
- c. Develop a cost comparison between meeting LCR requirements with (a) in-basin batteries, versus (b) the cost of new transmission that delivers of out-of-basin renewable resources to the LA Basin and reduces the LCR requirement. Costs for (a) and (b) could be compared to the PTEP proposal. This cost comparison should extend to the point where in-basin gas fired generation is “materially reduced or eliminated”.
- d. Western Grid also requests the CAISO apply available market data to determine the economic benefits of the PTEP alternative compared to gas fired generation. Specifically, we request the LCR value \$/KW -mo. for specific local generation that the PTEP displaces rather than an average LCR value that does not represent the actual cost of LCR paid by ratepayers in 2019 and beyond. We have found publicly available LCR payments in the LA Basin as shown below. We believe transparency is paramount to effectively and appropriately analyzing this and all projects and informing the CPUC Resource Planning and Procurement Proceedings.
- e. We ask that CAISO estimate the emission savings that the PTEP would provide. Based on our calculation, the PTEP will displace 7,358 GWh³ of gas generation in the load pockets of southern California. Assuming 16.70 \$/metric ton (CARB August 2020 estimate), this generation reduction would translate to \$8.88 per MWh or \$65 million per year.

³ 42% capacity Factor



- f. Although we have not completed an uncertainty impact analysis for the PTEP, we believe, based on initial analysis, the impact is significant. We agree with CAISO that it is important to perform sensitivity studies to cover events such as fires, we also recommend CAISO widen the scope of its sensitivity studies and conduct a comprehensive analysis that includes probability of uncertain events such as fire, loads, temperature, gas price increase, transmission and generation outages.

Resource Adequacy Value

When calculating benefits, CAISO should apply an LCR price that is more reflective of market realities. Based on the publicly available data reflected in Table 1 to 3, the weighted average price of local capacity contracts in the Western LA Basin is about \$8.90/kW-Month. As reflected in the tables below, this is based on an analysis of the publicly available data for existing LCR contracts totaling roughly 3,644 MW’s of existing gas plants in the LA Basin.

Table 1: 2019 Average Capacity Cost for Western LA Basin Gas-fired Resources (not including retiring OTC units)

Western LA Basin Generators (natural gas-fired)	2019 Avg Capacity Cost (\$/kW-Month)	NQC (MW)	\$/YEAR
El Segundo Energy Center	19.76	526.68	\$124,907,429
Malburg power plant	26.84	134	\$43,153,574
Walnut Creek Units	17.16	480.65	\$98,968,457
Long Beach Peakers (Hinson)	4.395	260	\$13,712,400
Harbor	3.925	99.99	\$4,709,529
Total	14.42	1501.32	\$285,451,389
Weighted Average Cost	15.84		

Table 2: 2019 Average Capacity Cost for Western LA Basin Gas-fired Resources (retiring OTC units)

Retiring OTC Generators in Western LA Basin	2019 Avg Capacity Cost (\$/kW-Month)	NQC (MW)	\$/YEAR
Alamitos*	3.65	335.06	\$14,675,628
Huntington Beach*	3.65	451.55	\$19,777,890
Redondo Beach	4.25	1355.73	\$69,142,230
Total	3.85	2142.34	\$103,595,748
Weighted Average Cost	4.03		



Table 3: Summary 2019 Average Capacity Cost for Western LA Basin Gas-fired Resources

	2019 Avg Capacity Cost (\$/kW-Month)	NQC (MW)	\$/YEAR
Total Table 1 and Table 2	10.45	3644	\$389,047,137
Weighted Average Cost	8.90		

In summary, the PTEP is a viable transmission solution that,

1. Provides 1,993 MW of LCR benefits as CAISO found in the 2019-2020 TPP and using a weighted average cost of 8.90 \$/KW-mo., the annual LCR benefit is estimated at \$213 million annually.
2. Provides ISO Ratepayers’ benefits estimated at \$53 million annually⁴
3. Reduces Emissions from gas-fired generation with benefits of \$65 million annually.

Table 4: Summary Estimated Benefits for PTEP

	(\$/year)	Present Value \$
Benefits		
Local Capacity Requirement (LCR) Savings	\$213,600,000	\$2,952,199,776
ISO Ratepayer Benefit	\$53,000,000	\$732,521,480
Emission Benefits	\$65,342,592	\$903,110,419
Total Benefits	\$331,942,592	\$4,587,831,675
Capital Investment		
Transmission Revenue Requirements	Annual Transmission Revenue requirements \$	Present Value Revenue Requirement \$
CAISO Transmission RR	\$185,000,000	\$2,405,000,000
Benefit to Cost	1.79	1.91

Additionally, CAISO should quantify these additional benefits that will be provided by PTEP:

1. Ability to provide fast ramp capability
2. Transmission capability for connecting offshore wind generation

⁴ Based on last year PTEP analysis “Annual average hourly default LAP LMP decreased from \$46.02/MWh to \$46.00/MWh. Annual average hourly SCE and SDGE area LMPs decrease by \$0.48/MWh and \$0.06/MWh respectively, while PG&E area LMP increases by \$0.48/MWh. Low PG&E area prices are driven by negative LMPs due to curtailed generation in the late-Spring months. The PTE project reduces curtailment by allowing energy to flow out of the constrained area increasing the average LMP for DLAP (negative to less negative in certain hours)”.



3. Ability to provide dynamic and stability to the grid using the Voltage Source Converters.
4. Energy cost savings and congestion cost benefits for increasing transmission capability between the Northern and Southern California
5. Fire and uncertainty mitigation
6. Reduced costs for renewable build up to comply with AB 100.

Thank you for your consideration.

A handwritten signature in blue ink that reads 'Christine Vangelatos'.

Christine Vangelatos
Managing Director – ZGlobal
On behalf of Western Grid Development