Lucky Corridor Project

New Mexico Generation Competitiveness in California Markets

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Introduction

The Lucky Corridor Project is a transmission line being developed to deliver eastern New Mexico renewable and gas energy to California and Southwest markets. This document examines the competitiveness of New Mexico generation resources to meet future California generation needs by using publicly available information. The most informative and comprehensive pubic document is the transmission expansion study that was completed by the Western Electric Coordinating Council's (WECC) Transmission Expansion Planning Policy Committee (TEPPC).

In summary, the TEPPC study results demonstrate that renewable and conventional gas generation from eastern New Mexico can successfully offset higher cost California renewable and gas generation even with the inclusion of new transmission costs.

TEPPC Regional Transmission Plan (Plan)

The following except from the Plan's Executive Summary provides the best description of the studies goals.

"The Western Electricity Coordinating Council (WECC) 10-Year Regional Transmission Plan (Plan) is an Interconnection-wide perspective on 1) expected future transmission and generation in the Western Interconnection, 2) what transmission capacity may be needed under a variety of futures, and 3) other related insights. The objective of the Plan is to provide information to stakeholders for their decision-making processes regarding where and when to build new transmission or take other related actions to help ensure the Western Interconnection is reliable, low-cost, efficient, and environmentally sound. In support of this objective, WECC's analyses are aimed toward:

a. understanding transmission system needs over a broad range of potential futures;
b. recognizing the potential economic benefits of transmission expansion, and;
c. identifying transmission additions that, if foregone or delayed, will result in diminished opportunities to realize infrastructure benefits over a likely range of futures. "

TEPPC examined how resources from various regions in the WECC would be able to compete with new California renewable and gas generation assuming transmission constraints were reduced with the construction of new transmission. The analysis developed an informed Expected Future 2019 resource portfolio assuming that RPS requirements were met and Once Through Cooling (OTC) mandated gas generation retirements were implemented in response to the Federal Clean Water Act.

TEPPC compared the cost of displacing 12,000 GWH of California's Expected Future 2019 resource portfolio with energy from six renewable rich areas around the west including New Mexico.

An hourly production cost model was used to constrain the generation dispatch in recognition of transmission constraints and to quantify re-dispatch costs or saving from the resource relocation.

Study Results

The following table from page 112 of the TEPPC report [2] shows the incremental resources changes that are necessary to relocate 12,000 GWH of generation from California to New Mexico. It identifies the incremental reductions in California generation by resource type and complementary increases in New Mexico generation. In order to match the capacity value of the California resources, combustion turbines were also added in New Mexico.

Table 55: Resource Capital Cost Comparison – New Mexico

Incremental Resources	MW	Regional Levelized Fixed Costs ($/kW-yr)	Levelized Fixed Costs ($M/yr)
Removed CA Solar PV	-280	417.93	-$117.02
Removed CA Solar CSP	-1,577	503.83	-$794.54
Removed CA Biomass	-141	656.48	-$92.56
Removed CA wind	-2,787	288.98	-$805.39
Total CA Removed	-4,785		
Added NM Biomass	82	527.31	$43.42
Added CO Biomass	66	549.75	$36.21
Added NM Solar Thermal w/ Storage	827	570.82	$471.78
Added NM Wind	2,115	208.31	$440.64
Total NM Added	3,090		
Additional CTs Required	783	149.33	$116.96
		Net Change in Resource Capital Cost*	**($700.50)**

*As compared to 2019 PC1A

Note: All E3 suggested financing assumptions were assumed

The regional cost differences in the incremental resources listed in the table above are primarily due to the capacity factor differences between the regions and the resource technologies. For example, California wind resources may have capacity factors around 30% and California solar PV may have capacity factors of 20% compared to a New Mexico wind resource at 40%. These capacity factor differences result in significantly less generating capacity required in New Mexico; however, the studies identified the need to install combustion turbines to provide the same on peak capacity value as provided by the California solar PV resource.

The implication on cost from relocating 12,000 GWH of generation to New Mexico is an annualized $700 million reduction in generation costs. This does not include the transmission cost and there is 3,090 MW of incremental New Mexico generation that will presumably need new transmission for it to be deliverable to California.

The $700 million per year becomes the cost cap for 3,090 MW of new transmission if New Mexico generation is to be competitive with California generation.

In making a broad-brush assumption to unitize the $700 million per year with 3,090 MW of transmission capacity; if New Mexico resources are to be competitive, the "break even" point or maximum cost of transmission is $227,000 per MW-year.

The cost of proposed new transmission is well below $227,000 per MW-year. For example the Luck Corridor project tariff rate including PNM and APS wheeling costs will be somewhere in the range of $100,000 to $110,000 per MW-year.

S**ummary**
The TEPPC study demonstrates that transmission expansion projects that deliver resources form eastern New Mexico are economically viable because they can enable New Mexico resources to effectively compete with California resources.

References:
Public documents

[1]"WECC 10-Year Regional Transmission Plan, Plan Summary", September 2011, Western Electricity Coordinating Council, www.wecc.biz

[2]"WECC 10-Year Regional Transmission Plan, 2019 Study Report", September 2011, Western Electricity Coordinating Council, www.wecc.biz

Attachment