

Modeling approach

Two primary cases were studied using the AURORAxmp dispatch model:

- Case 1** Platte River's Integrated Resource Plan (IRP) Portfolio
- Case 2** Zero Net Carbon Portfolio

- AURORAxmp is an industry-standard model, used by both Pace Global and Platte River, that can determine the *least-cost* portfolio of generation assets that meets defined constraints.
- By solving for the *least-cost* means of meeting ZNC (carbon neutrality) and reserve margins, the costs of achieving ZNC can be compared to the costs of the 2017 IRP portfolio.
- A preliminary evaluation of a possible RTO structure is currently being developed.

Steps to determine the least-cost ZNC portfolio



Step 1 Define "market" carbon emission rate – 1,803 lb/MWh based on the market today

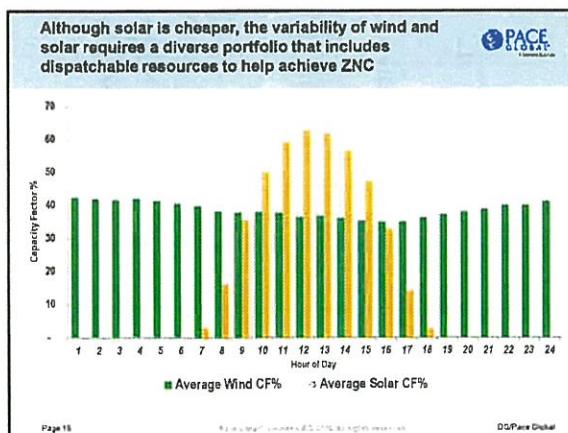
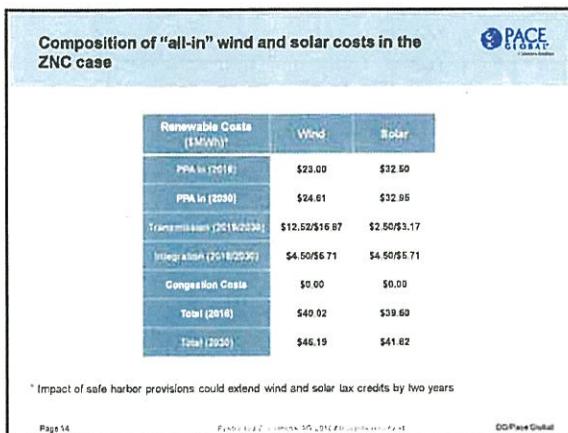
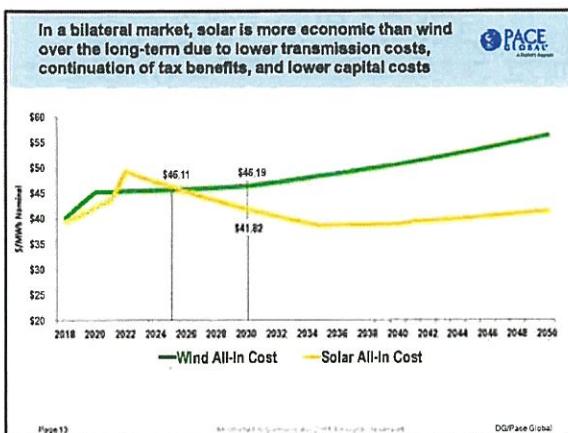
Step 2 Assume an initial renewable energy requirement as a percent of load

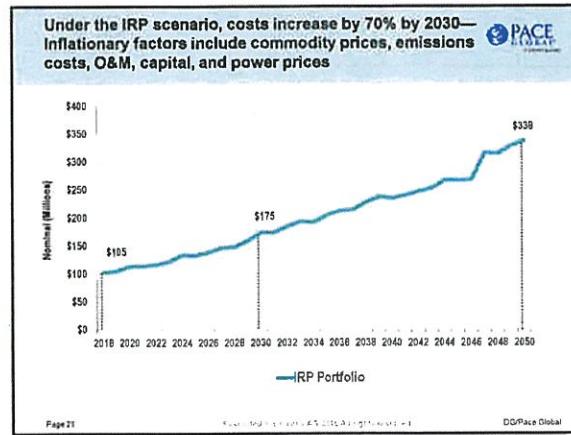
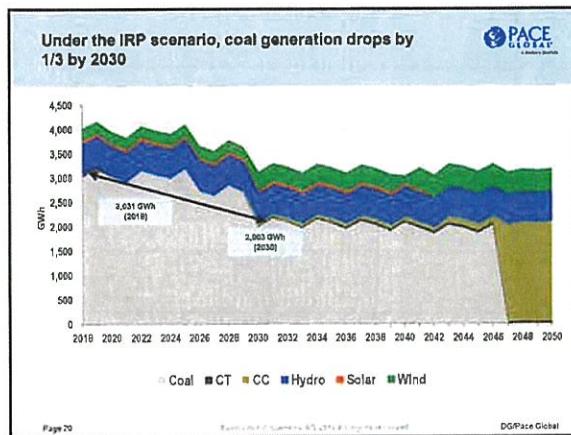
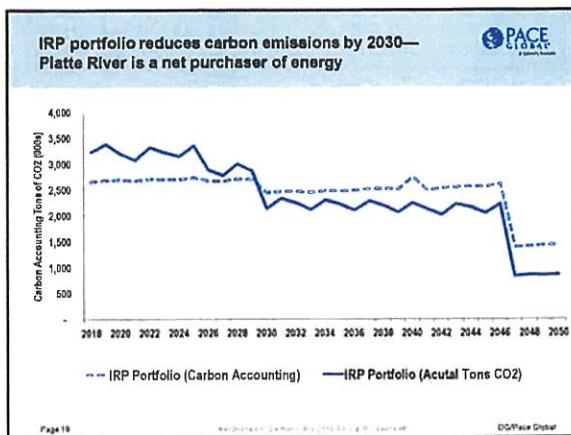
Step 3 Determine the least-cost portfolio that meets Platte River's defined reserve margin requirements (15%)

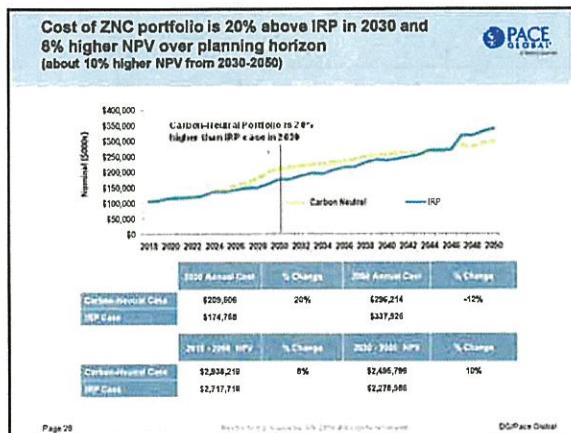
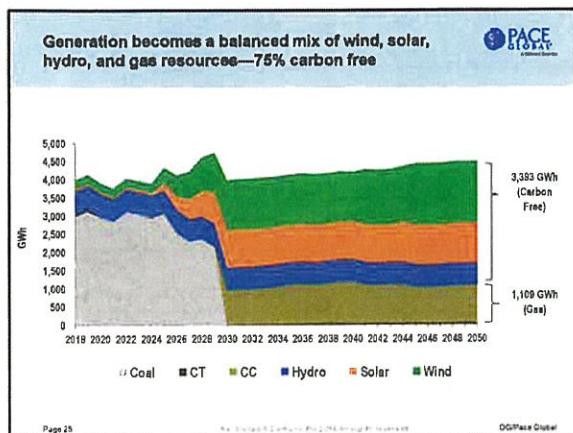
Step 4 Determine if ZNC requirement is met in 2030 and beyond

Step 5 Adjust renewable energy requirement as a percent of load and repeat Steps 3 and 4 until the ZNC requirement is met

	2020 Annual Generation (MWh)	Emissions Rate (lb/MWh)	Accounting Tons of Carbon ^a
Coal	0	2,087	-
CT	18,713	1,351	12,641
CC	941,129	794	373,628
Hydro	611,793	0	-
Solar	1,026,798	0	-
Wind	1,385,805	0	-
Total Plant Generation	3,984,238		586,289
Exports	588,287	(1,803)	-526,537
Imports	47,658	1,803**	42,064
Net Carbon Emissions			(59,305)







RTO assessment has been initiated but is not complete

Joining an RTO is uncertain and difficult to model as accurately as the current bi-lateral market:

- Approval of the RTO is uncertain
- The market rules are uncertain
- Who will ultimately join the RTO is not clear
- Whether participants will move more aggressively to renewables is unclear

Directionally, however, several things are clear:

- Transactions with market participants are easier and more likely to occur
- Transmission costs for remote sources will drop since wheeling charges will be eliminated
- Remote wind will be more economic relative to local solar
- Overall costs should be expected to fall with an RTO

Pace Global has begun to analyze this option for Platte River and will refine the analysis as more information becomes available