

The background of the slide is a photograph of a large, white, lattice-structured transmission tower against a clear blue sky. Power lines are visible extending from the tower across the frame.

Transmission Expansion Advisory Committee Meeting

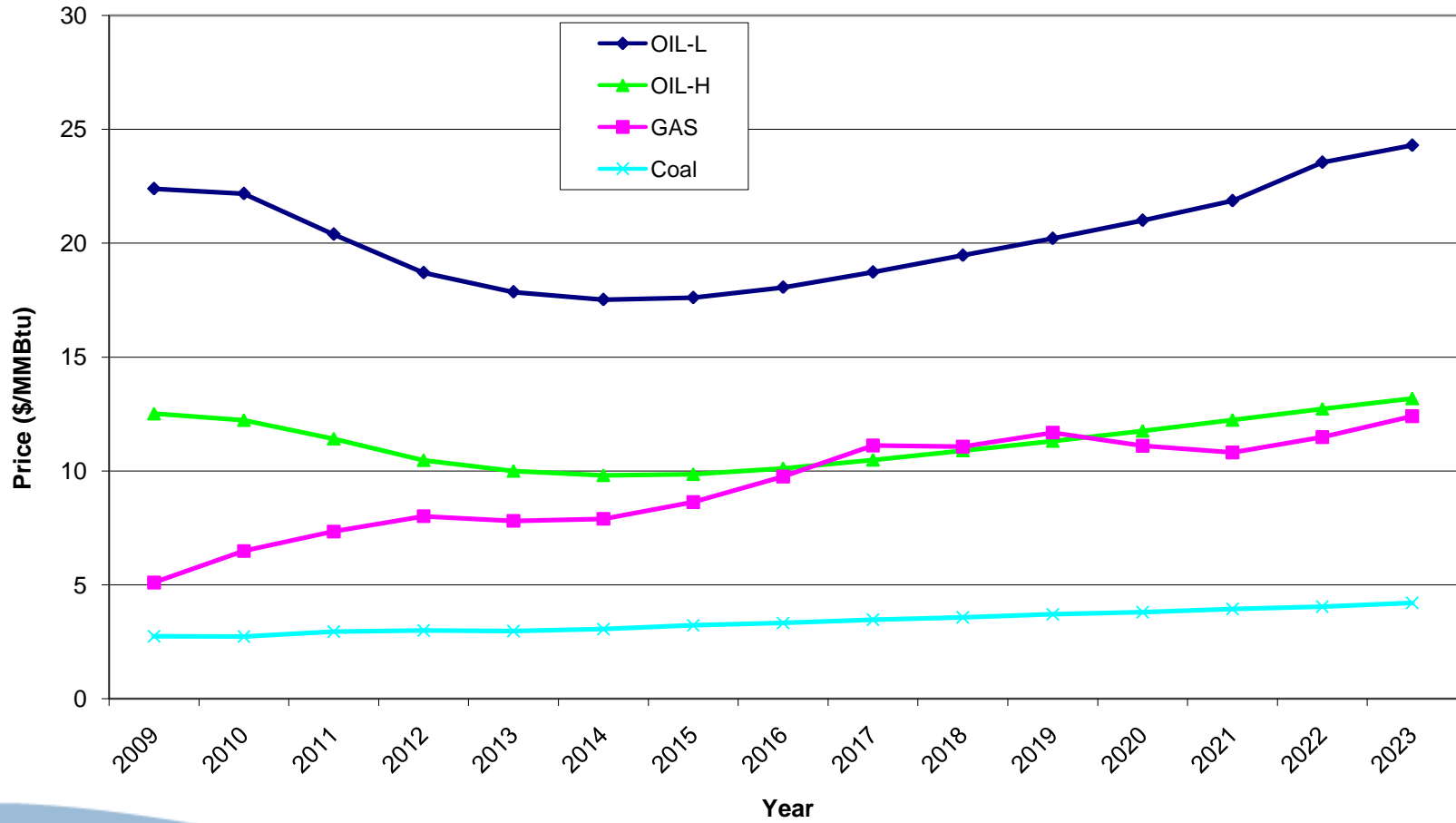
2009 Market Efficiency Analysis Input Assumptions

April 14, 2009

- Study years: 2009, 2012, 2015, 2018, 2023
- PROMOD IV model from Ventyx
- Underlying input data contained in PROMOD Powerbase (February 2009 update) including generating units and unit characteristics, fuel costs and emissions costs
- Powerflow Cases
 - 2009 power flow case to represent today's "as-is" system
 - 2013 RTEP power flow case to represent future system

- Fuel prices
- Load and energy
- Future generation scenario
- Emissions prices
- Transmission topology
- Carrying charge rate and discount rate

Figure 1 - Fuel Price Assumptions



- PJM zonal peak and zonal energy forecast from PJM 2009 Load Forecast Report
- Historical zonal hourly loads used to develop zonal hourly load shape

Table 1 – Forecast PJM Peak and Energy

	2009	2012	2015	2018	2023
Peak (MW)	134,428	144,613	151,410	156,822	165,006
Energy (GWh)	712,236	766,257	800,420	829,620	871,619

- Modeled demand response quantities are sum of ILR Forecasted Planning Period Parameters and DR (cleared and FRR) from RPM auctions by zone.
- 2009 values from 2009/10 RPM Auction; 2012 and beyond values from 2011/12 RPM Auction.

	2009	2012	2015	2018	2023
Demand Response (MW)	2940	3344	3344	3344	3344

- generation model includes all existing in-service generation plus active queue generation with executed ISA minus expected future deactivations
- installed reserve requirement is met through 2013
- To meet installed reserve requirement for study years 2015, 2018 and 2023, 3,900 MW, 10,200 MW and 18,100 MW of new generation will be added to model, respectively
- New generation will be added to PJM regions in proportion to the regional location and regional generation type of future generation projects in Generation Interconnection Queues through Queue U

Figure 2 - PJM Market Efficiency Reserve Margin

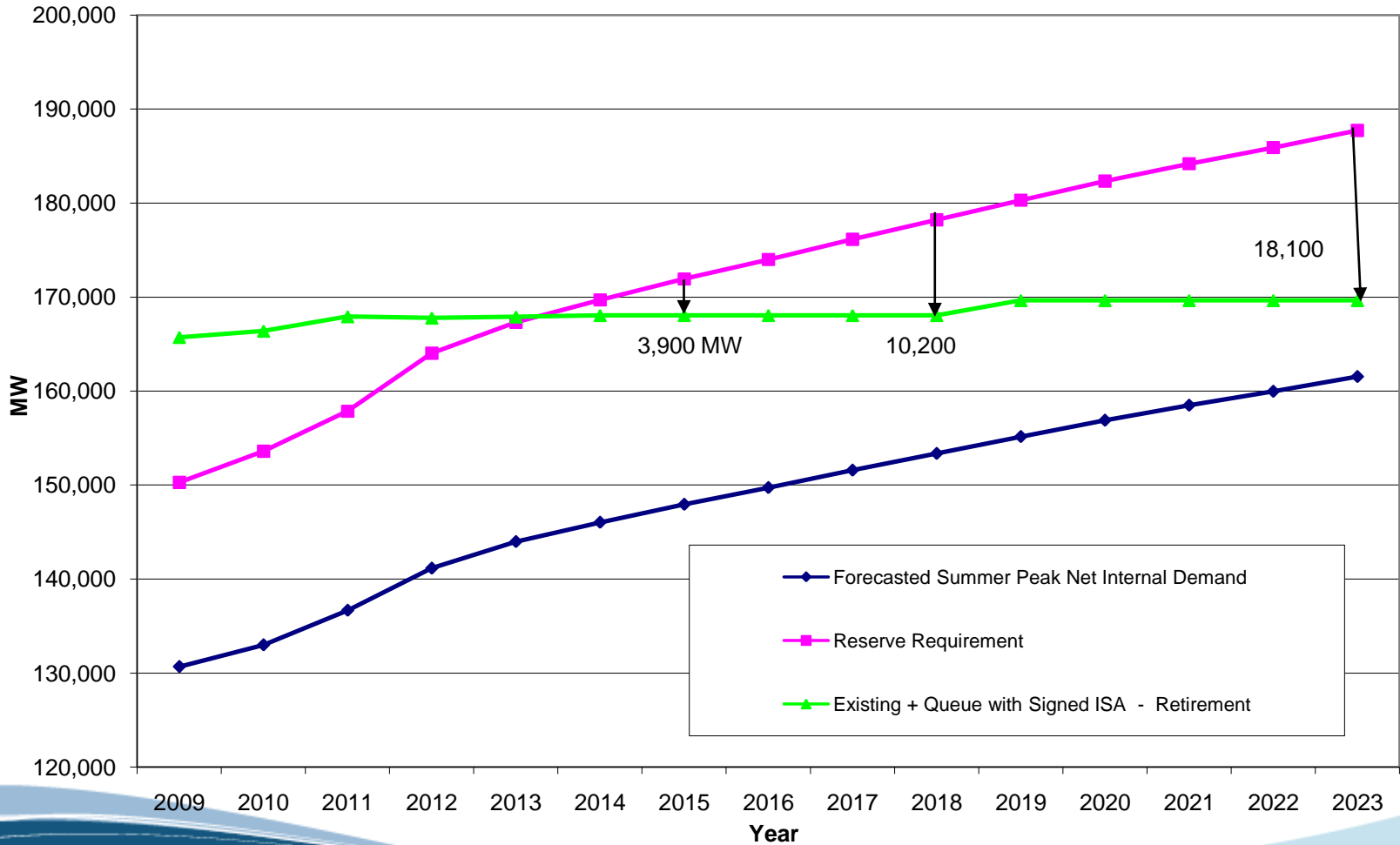


Table 2 – Location and Generator Type to Maintain Reserve Margin

Region	Nuclear	Coal	Gas	Oil	Wind	Other Renewable	Total Region
AECO/DPL/JCPL/PECO/PSEG	0.3%	0.0%	23.1%	0.6%	1.0%	2.3%	27.4%
AEP/APS/COM/DAY/DUQ	0.4%	10.6%	12.5%	0.0%	14.3%	1.0%	38.8%
BGE/PEP	3.6%	0.0%	4.0%	0.0%	0.0%	0.0%	7.6%
DOM	0.8%	0.0%	6.6%	0.0%	0.1%	0.6%	8.1%
ME/PN/PPL	3.5%	0.2%	10.7%	1.7%	1.2%	0.7%	18.1%

Figure 3 - SO2 Emission Allowance Price Assumptions

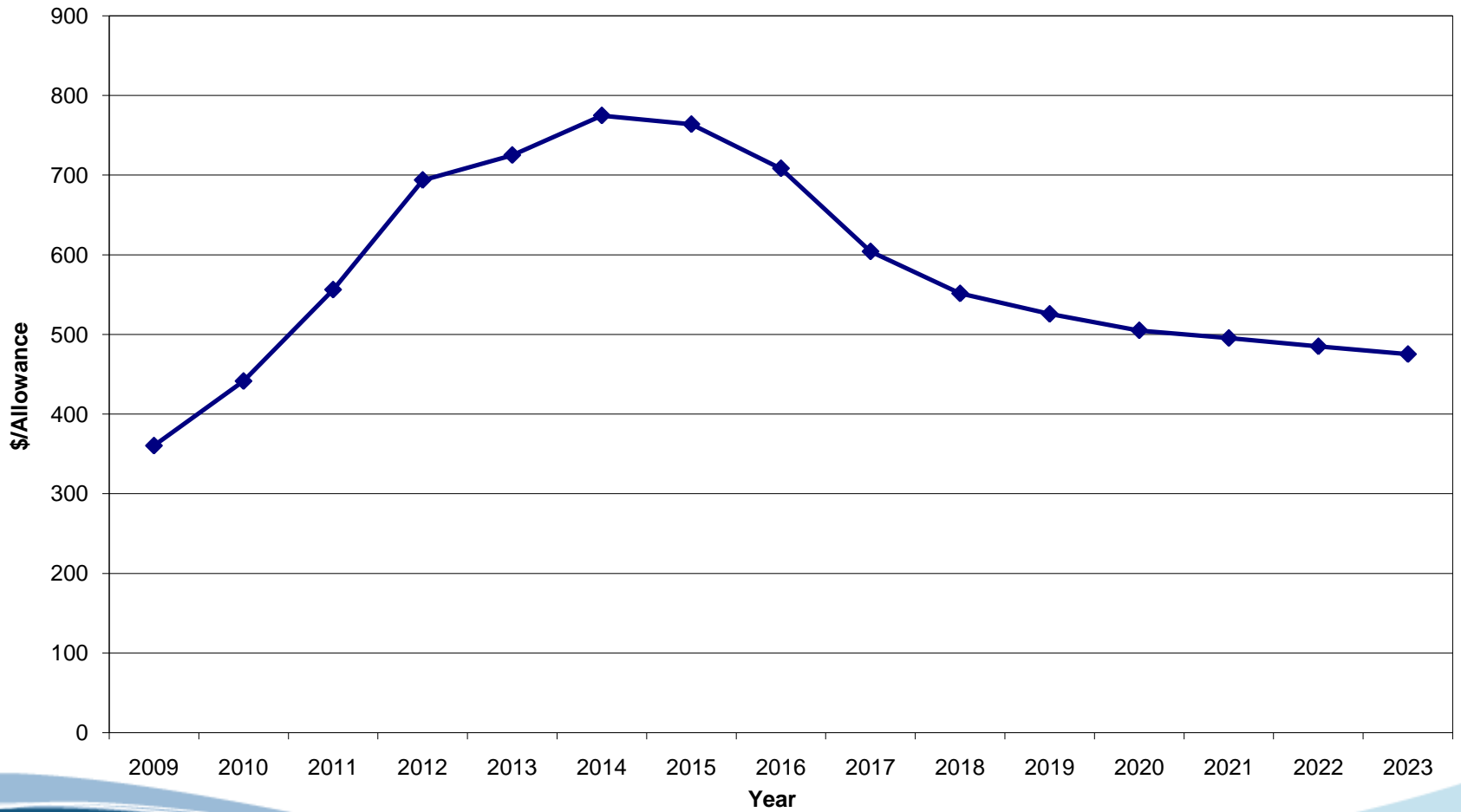


Figure 4 - NOx Emission Allowance Price Assumptions

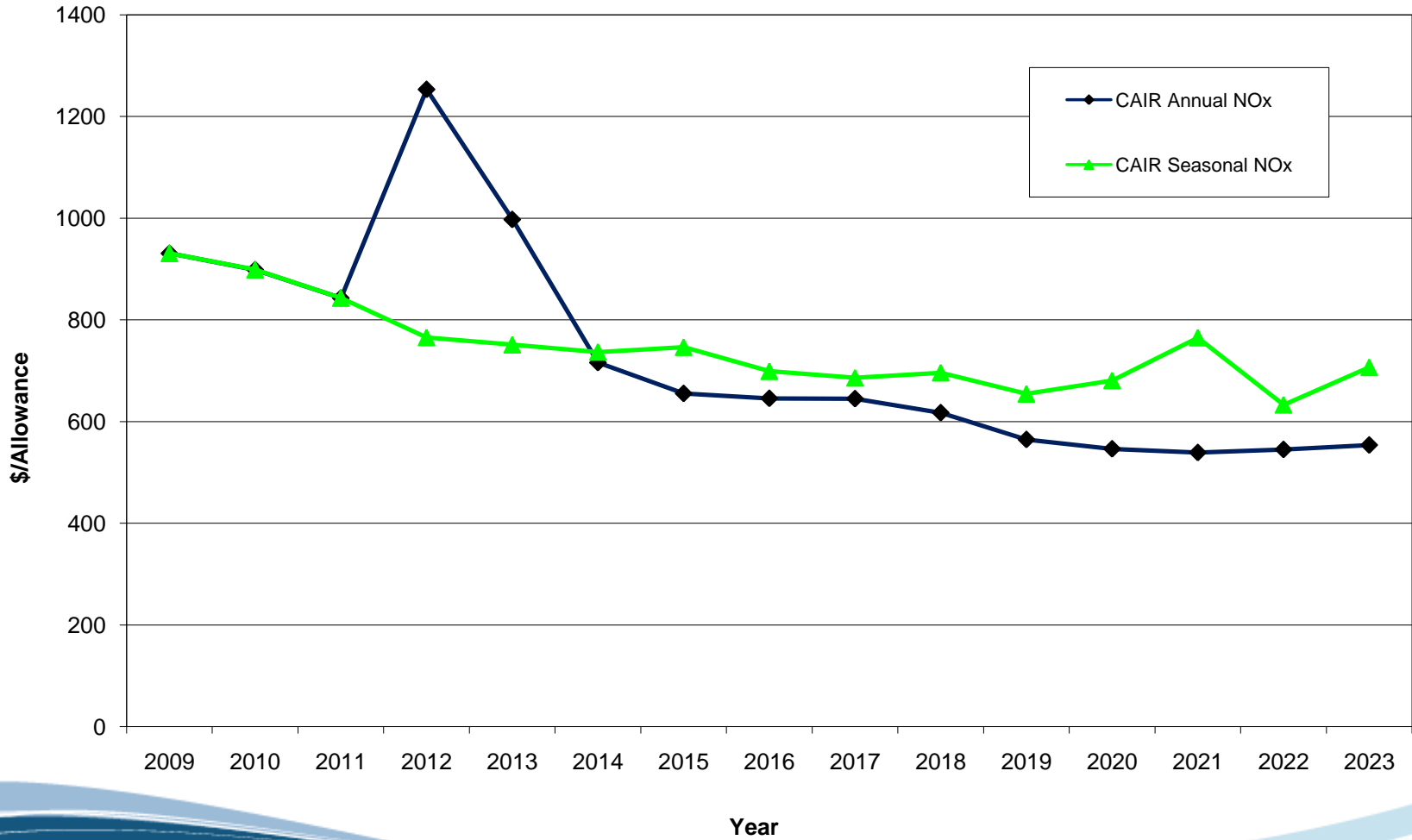
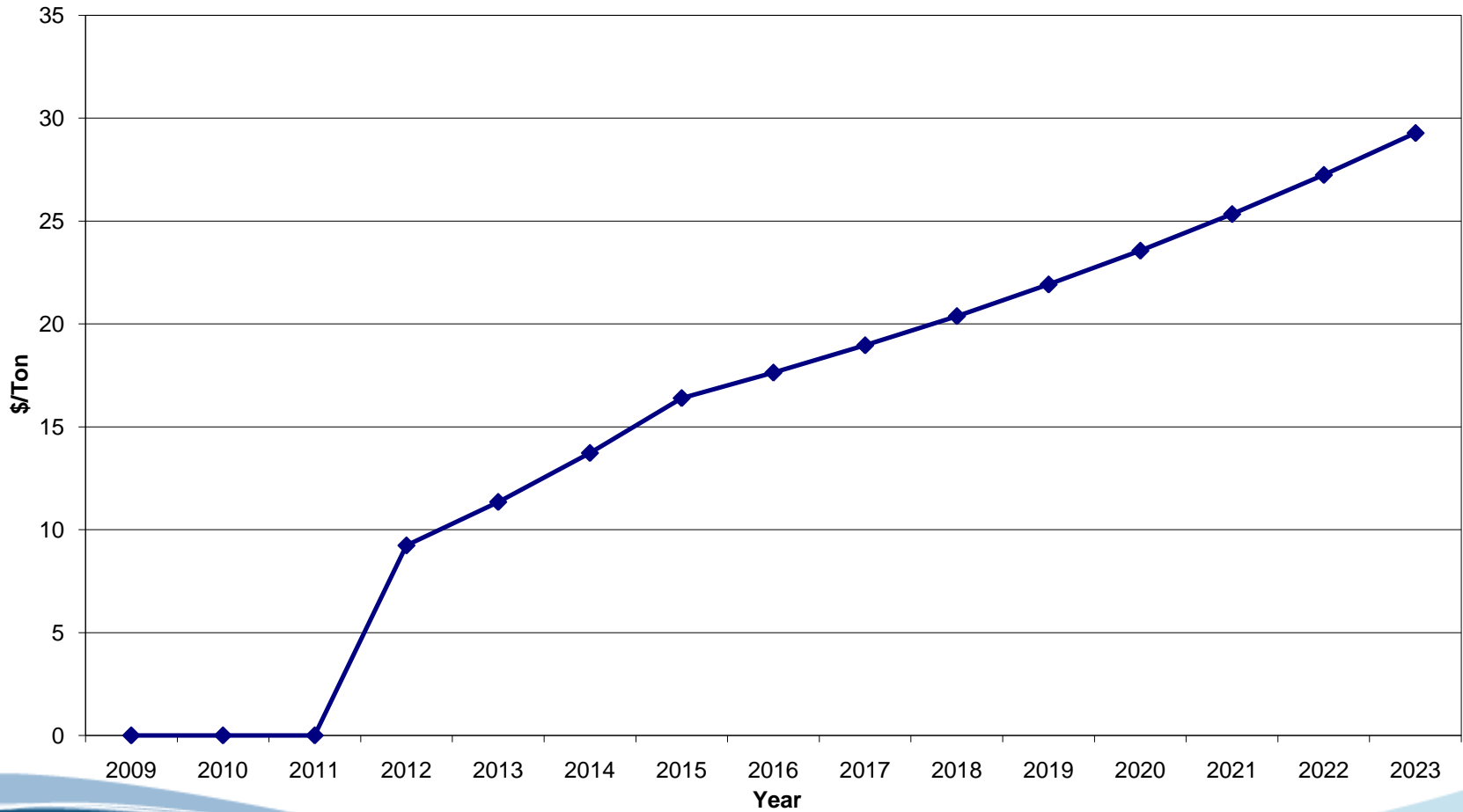


Figure 5 - CO2 Emission Assumptions



- Powerflow Cases
 - 2009 power flow case to represent today’s “as-is” system
 - 2013 RTEP power flow case to represent future system
- Thermal Constraints
 - monitor/contingency pairs
 - NERC Book of Flowgates
 - Planning study results
 - Historical PJM congestion events
- Voltage Constraints
 - PJM reactive interface limits
 - MW limits based on historical values for “as-is” case adjusted for future upgrade impacts in 2012 case

- Discount rate and revenue requirement assumptions require input from PJM TOs
 - most recent after-tax embedded cost of capital, total transmission capitalization, and levelized carrying charge rate, including the recovery period. The recovery period shall be consistent with recovery periods allowed by the Commission for comparable facilities
 - discount rate shall be based on the TOs' most recent after-tax embedded cost of capital weighted by each TO's total transmission capitalization

- PJM has received info from 6 TOs so far
 - After-tax cost of capital values ranging from 7.27% to 7.87%
 - Annual carrying charge rates ranging from 12.73% to 29.33%
- Wide range of annual carrying charge values indicates clarification is needed to ensure consistent assumptions regarding development of these values

- Continued development of assumption regarding discount rate and annual carrying charge rate
- PJM Board approval of input assumptions in June
- Begin analysis with regular updates to TEAC