Market Efficiency Process Enhancement
Carbon Impact Reporting

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Planning Committee

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Proposed Market Efficiency Enhancement – Carbon Impact Reporting

- Starting with the current 2020/2021 Market Efficiency Long-Term Window, PJM will include carbon impact reporting, as an informational item, for the Market Efficiency projects submitted to the PJM Board for approval.
  - CO2 impacts will not be used in evaluation of projects.
- Report relatively straightforward to integrate in the current workflow.
  - The carbon impact of a project, in metric tons, will be calculated as the change in PJM total annual CO2 emissions between the base case and the project case, over the same 15-year period as the other Market Efficiency benefits.
- Transmission impact on CO2 emissions depends on the change in dispatch measured as part of the Market Efficiency analysis.

15–Year Carbon Impact Calculation (Hypothetical Example)

RTEP Year: 2025
Project In-Service Year: 2025
Market Simulation Years: 2021, 2025, 2028 & 2031

2021	Period 1	2025	Period 2	2028	Period 3	2031	Period 4

Period 1 CO_2 Change 2022 - 2024

$$2021\ CO_2\ \text{Change} + \frac{(2025\ CO_2\ \text{Change} - 2021\ CO_2\ \text{Change})}{2025\ - 2021}\ \text{x}\ (\text{Year}\ - 2021)$$

Period 2 CO_2 Change 2026 - 2027

$$2025\ CO_2\ \text{Change} + \frac{(2028\ CO_2\ \text{Change} - 2025\ CO_2\ \text{Change})}{2028\ - 2025}\ \text{x}\ (\text{Year}\ - 2025)$$

Period 3 CO_2 Change 2029 - 2030

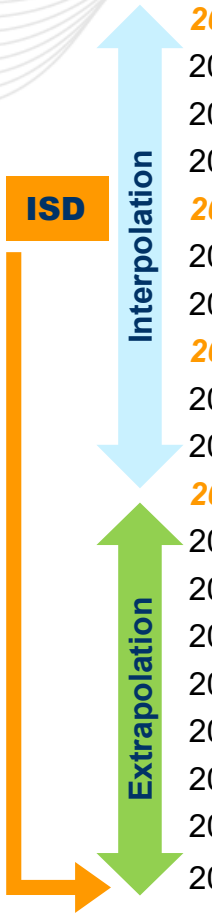
$$2028\ CO_2\ \text{Change} + \frac{(2031\ CO_2\ \text{Change} - 2028\ CO_2\ \text{Change})}{2031\ - 2028}\ \text{x}\ (\text{Year}\ - 2028)$$

Period 4 CO_2 Change 2031 - 2039

Extrapolation using Excel TREND Formula

15–Year Carbon Impact Calculation (cont.)

- **Carbon impact**, in metric tons, is calculated as the change in PJM total annual CO2 emissions between the base case and the project case, over the same 15-year period as the other benefits.
- **PJM CO_2 Change =** Algebraic sum of each trended PJM Zone CO_2 Change, over 15-year period (2025 – 2039).
- The expected carbon impact for this hypothetical project would be a decrease in 15-year PJM annual CO_2 emissions by 1,767,712 tons.



Year	Zone 1 CO_2 change (tons)	Zone 2 CO_2 Change (tons)	Sum of PJM Zones CO_2 Change (tons)
2021	44,500	44,500	89,000
2022	45,750	45,750	91,500
2023	47,000	47,000	94,000
2024	48,250	48,250	96,500
2025	49,500	49,500	99,000
2026	51,167	50,833	101,000
2027	50,833	52,167	103,000
2028	51,500	53,500	105,000
2029	54,167	54,833	109,000
2030	56,833	56,167	113,000
2031	59,500	57,500	117,000
2032	59,363	58,733	118,096
2033	60,774	60,034	120,808
2034	62,185	61,336	123,521
2035	63,596	62,637	126,233
2036	65,007	63,938	128,945
2037	66,418	65,240	131,658
2038	67,829	66,541	134,370
2039	69,240	67,842	137,082
			1,767,712

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Market Efficiency Carbon Impact Reporting

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