2022 RTEP Multi-Driver Proposal Window No. 1

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2022 RTEP Multi-Driver Proposal Window 1

- Window opened on 6/7/2022
- Window closed on 8/8/2022
- For this Window, PJM seeks technical solutions, also called proposals, to resolve potential reliability criteria violations on multi-driver facilities identified below in accordance with all applicable planning criteria (PJM, NERC, SERC, RFC, and Local Transmission Owner criteria).
- 14 total proposals submitted from 3 different entities (includes 3 carry-over proposals from 2021 Proposal Window 2)
  - 8 Greenfields
  - 6 Upgrades
- Cost Estimates: Approximate range from $215K – 127M
- 4 Proposals identified with cost containment
- Redacted public proposals are available:

  https://pjm.com/planning/competitive-planning-process/redacted-proposals

2022 RTEP Multi-Driver Proposal Window 1 (1/2)

Proposal ID#	Project Type	Project Description	Total Construction Cost ($M)	Zone	kV Level	Analysis	Flowgate(s)
40	Greenfield	Swap 345kV transmission line at Green Acres, rebuild University Park to Olive 345kV lines and add a reactor along Crete- St John 345kV line.	83.4	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
82	Greenfield	Add a new 345 kV double circuit to tap existing lines and connect to an existing sub, and reconfigure existing lines at the sub	61.5	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
91	Greenfield	Goodenow-Lemon Lake 345kV Greenfield Line and Stations (Enhanced)	101.8	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
165	Upgrade	Dumont-Stillwell Sag Study	0.2	AEP	345	Winter Gen Deliv	MDW1-GD-S1620
401	Greenfield	Add a new 345kV double circuit to reconfigure existing lines	51.2	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
541	Greenfield	Peregrine Ditch	14.8	AEP/ComEd	345	Winter Gen Deliv	MDW1-GD-W392-MDW1-GD-W393

2022 RTEP Multi-Driver Proposal Window 1 (2/2)

Proposal ID#	Project Type	Project Description	Total Construction Cost ($M)	Zone	kV Level	Analysis	Flowgate(s)
597	Greenfield	Goodenow-Lemon Lake 345kV Greenfield Line and Stations (Robust)	127.1	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
612	Greenfield	Goodenow-Lemon Lake 345kV Greenfield Line and Stations (Basic)	98.1	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
644	Upgrade	Swap 345kV transmission line at Green Acres, rebuild University Park to Olive 345kV lines	98.8	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
664	Greenfield	Add a new 345 kV double circuit line looping the existing line into a new substation	74.0	AEP/ComEd	345	Winter Gen Deliv, Summer Gen Deliv, Market Efficiency	MDW1-GD-S1620,MDW1-ME-01,MDW1-ME-02,MDW1-GD-W392,MDW1-GD-W393,MDW1-GD-W309,MDW1-GD-W404,MDW1-GD-W419,MDW1-ME-04,MDW1-GD-W172,MDW1-GD-W171,MDW1-GD-W188,MDW1-GD-W190,MDW1-GD-W185,MDW1-GD-W332,MDW1-GD-W331,MDW1-ME-03
908	Upgrade	Olive-University Park Sag Study	1.5	AEP/ComEd	345	Winter Gen Deliv	MDW1-GD-W392-MDW1-GD-W393
253	Upgrade	Rebuild 345 kV Lines 6607/6608 East Frankfort - Crete and 94507/97008 Crete - St. John	62.6	ComEd	345	Winter Gen Deliv	GD-W2-W5, GD-W2-W6
977	Upgrade	Rebuild 345 kV double circuit Lines 94507 and 97008 Crete - Indiana	17.1	ComEd	345	Winter Gen Deliv	GD-W2-W5, GD-W2-W6
994	Upgrade	Install Series Inductor on Line 94507 Crete - St. John	12.0	ComEd	345	Winter Gen Deliv	GD-W2-W5, GD-W2-W6

Reliability Analysis

- PJM's reliability analysis showed that all 14 proposals solve the intended reliability criteria violations. However proposal #977 resulted in harm, and so was not considered further.
  - NOTE: Proposals are not required to resolve all of the posted flowgates. PJM can combine proposals for a more comprehensive solution.
- PJM conducted an independent review of the project components and costs, and made adjustments based on the following:
  - Where more accurate scope and costs were known from the incumbent TO
  - Where assumptions were documented in the proposal (which were also confirmed with proposing entity) as further described in the next slide.

Independent Cost Review

*Proposal ID#	Type	Proposing Entity	Original Cost ($M)	Independent Cost ($M)	Reason for Cost Adjustment
165	Upgrade	AEP	$0.22	$0.22	No cost adjustments made.
908	Upgrade	AEP	$1.50	$1.50	No cost adjustments made.
91	Greenfield	AEP	$101.77	$130.61	Inclusion of proposal #977, #165 and s2631 as documented in proposal assumptions.
541	Greenfield	AEP	$14.79	$89.19	Inclusion of proposal #253, #165 and s2631 as documented in proposal assumptions.
597	Greenfield	AEP	$127.13	$155.97	Inclusion of proposal #977, #165 and s2631 as documented in proposal assumptions.
612	Greenfield	AEP	$98.12	$126.97	Inclusion of proposal #977, #165 and s2631 as documented in proposal assumptions.
253	Upgrade	ComEd	$62.68	$64.67	Inclusion of NEET proposal #644.3 (Reconductor Crete - St. John-NEETMA 345 kV TL upgrade)
977	Upgrade	ComEd	$17.13	$19.12	Inclusion of NEET proposal #644.3 (Reconductor Crete - St. John-NEETMA 345 kV TL upgrade)
994	Upgrade	ComEd	$12.01	$12.01	No cost adjustments made.
644	Upgrade	NEET	$98.77	$72.37	Replacement of NEET's reconductor scope/cost of ComEd facilities (#644.4-7) with ComEd's proposal 253 rebuild. Cost adjustment for #644.8 component with estimate from incumbent TO. Removal of #644.2 component cost that will remain a supplemental project.
40	Greenfield	NEET	$83.44	$62.13	Replacement of NEET's reconductor scope/cost of ComEd facilities with ComEd's proposal #253 rebuild (using per mile estimate). Removal of #40.2 component cost that will remain a supplemental project.
82	Greenfield	NEET	$61.52	$68.93	Replacement of NEET's reconductor scope/cost of ComEd facilities with ComEd's proposal #977 rebuild. Cost adjustment for #82.9 component with estimate from incumbent TO.
401	Greenfield	NEET	$51.23	$48.44	Cost adjustment for #401.4 component with estimate from incumbent TO.
664	Greenfield	NEET	$73.96	$90.81	Replacement of NEET's reconductor scope/cost of ComEd facilities with ComEd's proposal #253 rebuild (using per mile estimate). Cost adjustment for #664.7 component with estimate from incumbent TO. Removal of #664.3 component cost that will remain a supplemental project.

*Preferred solutions are identified in green.

Additional Benefits: Aging Infrastructure

- Listed below are proposals which provide additional benefit by addressing aging infrastructure in the area not already addressed in the base case. Marked in green are proposals which provide the most benefit in this regard.

Proposal ID#	Additional Benefits
91	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles) and NEET's section of Crete-St. John 345 kV line (6.95 miles).
541	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles), NEET's section of Crete-St. John 345 kV line (6.95 miles) and ComEd's 345 kV double circuit extending from Crete to East Frankfort (12.7 miles).
597	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles) and NEET's section of Crete-St. John 345 kV line (6.95 miles).
612	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles) and NEET's section of Crete-St. John 345 kV line (6.95 miles).
253	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles), NEET's section of Crete-St. John 345 kV line (6.95 miles) and ComEd's 345 kV double circuit extending from Crete to East Frankfort (12.7 miles).
977	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles) and NEET's section of Crete-St. John 345 kV line (6.95 miles).
644	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles), NEET's section of Crete-St. John 345 kV line (6.95 miles) and ComEd's 345 kV double circuit extending from Crete to East Frankfort (12.7 miles).
40	Addresses aging infrastructure on a portion of ComEd's 345 kV double circuit extending from St. John to East Frankfort (12.21 miles), and NEET's section of Crete-St. John 345 kV line (6.95 miles).
82	Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles) and NEET's section of Crete-St. John 345 kV line (6.95 miles).
664	Addresses aging infrastructure on a portion of ComEd's 345 kV double circuit extending from St. John to East Frankfort (12.21 miles), and NEET's section of Crete-St. John 345 kV line (6.95 miles).

Reliability Analysis - Top 3 Solutions

- Based on reliability performance, adjusted cost and additional benefits, the below proposals are the top 3 preferred solutions from a reliability perspective.

Proposal ID#	Type	Proposing Entity	Independent Cost ($M)	Additional Benefits
253	Upgrade	ComEd	$64.67	Addresses all of Exelon's EOL facilities in the area, along with NEET EOL facilities not already addressed by s2509 (which will remain a supplemental project).
644	Upgrade	NEET	$72.37	
541	Greenfield	AEP	$89.19	

Market Efficiency Analysis

Market Efficiency Screening – Individual Proposals

- Reliability analysis showed Proposal #977 resulted in harm, therefore was not considered for further Market Efficiency analysis.
- Proposal #253, as a standalone project, does not resolve the congestion drivers Dumont-Stillwell and Olive-University Park 345 kV, therefore not addressing the market efficiency need.
- Market efficiency simulations showed that most individual proposals leave significant congestion on Dumont-Stillwell and/or Olive-University Park and will benefit from combining with sag studies.
  - Individual proposal screening analysis results included in Appendix A.

Market Efficiency – Combination Projects

- Market efficiency modeling data and results updated to reflect a modeling correction related to Olive – University Park line rating.
- The solution that yields the highest market efficiency benefits is the combination of proposal #644 and proposal #908.
- Other considerations:
  - Combinations based on proposals #541 and #664 have significantly higher costs than the #644 and #908 combination.
  - Proposal #40 and the combination #82 / #908 yield significantly lower benefits than the #644 / #908 combination.
  - Proposal #82, #541 and #664 include greenfield components.

Market Efficiency Screening – Top 5 Combination Solutions

*Proposal Combo ID#	Redacted Proposal Description	Type	% Cong. Solved	Market Efficiency Benefits (15-Years Net Load Payment)	Independent Cost (In-Service $M)	BC Ratio
644 + 908	Swap 345kV transmission line at Green Acres, rebuild University Park to Olive 345kV lines. Olive-University Park Sag Study.	Upgrade	87%	$169.83	$82.30	1.99
541 + 908	Construct a greenfield 4-breaker ring station (Peregrine Ditch 345 kV) in Union Township, IN. Tap Olive–Green Acres 345 kV and Olive-University Park 345 kV at Tower #275 into the new station. Dumont-Stillwell Sag Study. Additional Dumont-Stillwell terminal upgrade. Olive-University Park Sag Study.	Greenfield	87%	$165.59	$94.72	1.68
664 + 908	Add a new 345 kV double circuit line looping the existing line into a new substation. Olive-University Park Sag Study.	Greenfield	85%	$140.91	$96.38	1.41
40	Swap 345kV transmission line at Green Acres, rebuild University Park to Olive 345kV lines and add a reactor along Crete- St John 345kV line.	Upgrade	85%	$120.03	$65.02	1.78
82 + 908	Add a new 345 kV double circuit to tap existing lines and connect to an existing sub, and reconfigure existing lines at the sub. Olive-University Park Sag Study.	Greenfield	63%	$119.86	$75.32	1.53

Note: Preferred solution is identified in green.

Recommended Solution

- Proposal #253, which is the top candidate from reliability perspective, as a standalone project, does not resolve the congestion drivers Dumont-Stillwell and Olive-University Park 345 kV, therefore not addressing the market efficiency need.
- PJM's preferred solution is the combination of modified proposal #644 as described below and proposal #908 to address both reliability and market efficiency drivers:
  - Proposal #644, modified to replace NEET's reconductor scope/cost of ComEd facilities (644.4-7) with ComEd's proposal #253 rebuild and removal of component 644.2 cost (which will remain a supplemental project), combined with proposal #908.
- The following sensitivities were performed for the preferred solution #644 / #908:
  - Low/High Load Forecast, Low/High Gas Forecast, FSA Generation.
  - See Appendix B for sensitivity results.
- PJM has shared the recommended solution with MISO for evaluation. MISO did not indicate any concern with the proposed solution.

Recommended Solution

Baseline Proportional Multi-Driver Projects

2022 RTEP Multi-Driver Window 1

ComEd Transmission Zone: Baseline Crete-St. John 345 kV Area Improvement

Process Stage: Recommended Solution

Criteria: Summer & Winter Generator Deliverability

Assumption Reference: 2027 RTEP assumption

Model Used for Analysis: 2027 RTEP Summer & Winter case

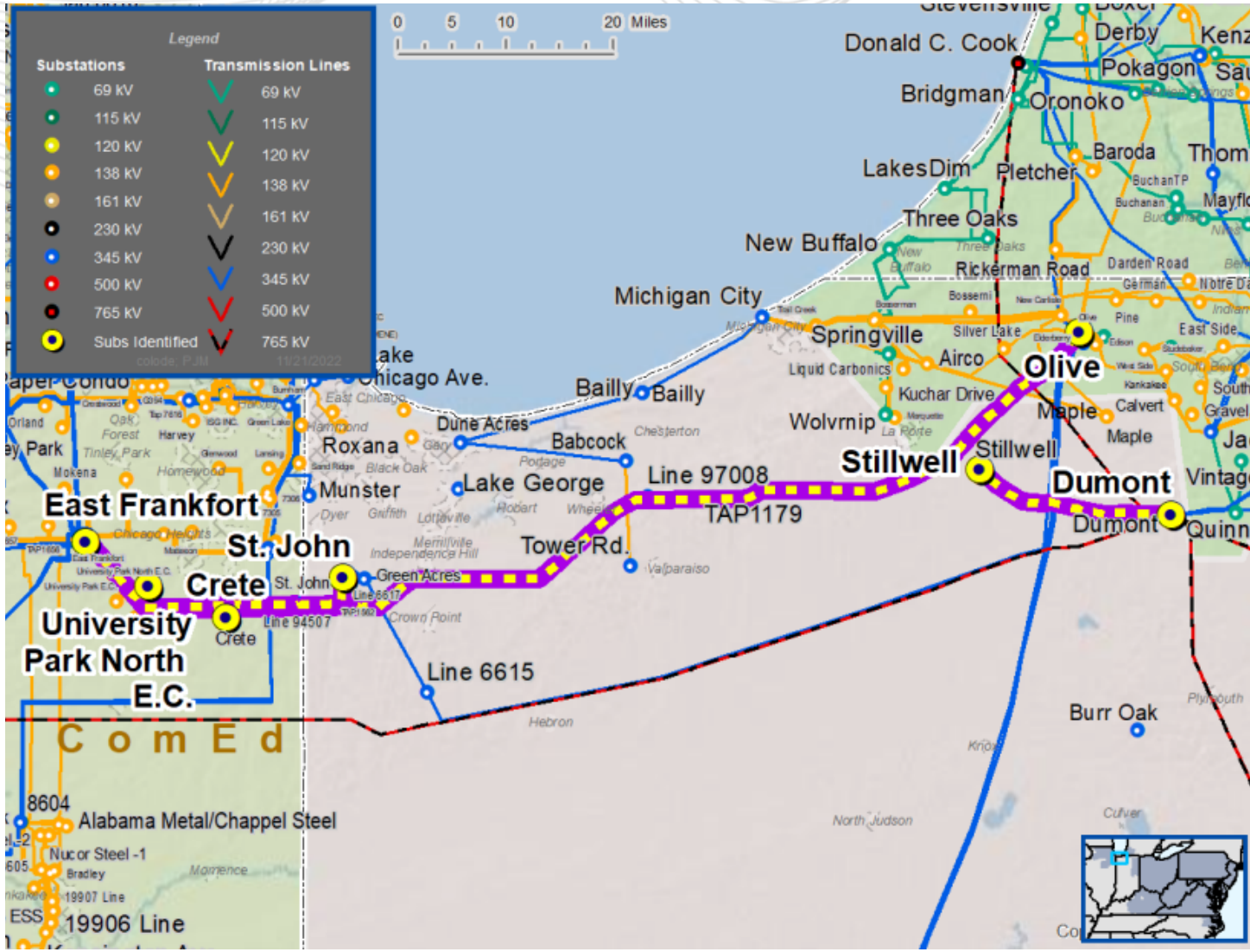
Proposal Window Exclusion: None

Problem Statement:

MDW1-GD-S1620, MDW1-GD-W172, MDW1-GD-W171, MDW1-GD-W188, MDW1-GD-W190, MDW1-GD-W185, MDW1-GD-W332, MDW1-GD-W331, MDW1-GD-W309, MDW1-GD-W404, MDW1-GD-W419, MDW1-GD-W392, MDW1-GD-W393; MDW1-ME-01, MDW1-ME-02, MDW1-ME-03, MDW1-ME-04

In 2027 RTEP summer case, the Stillwell-Dumont 345 kV line is overload for an N-2 outage. In the 2027 RTEP winter case, the Crete-St. John 345 kV line is overloaded for N-1 and N-2 outages, and the Crete-E. Frankfort and University Park N-Olive 345 kV lines are overloaded for N-1 outages.

Additionally, in the 2027 RTEP cases there was congestion identified on the Dumont-Stillwell 345 kV line, the E. Frankfort-Crete-St. John 345 kV line and University Park N-Olive 345 kV line.



ComEd Transmission Zone: Baseline Crete-St. John 345 kV Area Improvement

Recommended Solution: Proposal 644 (modified) and proposal 908

- Outside of the Green Acres substation, swap the NIPSCO Green Acre Tap towers from the St. John-Green Acres-Olive 345 kV line to the University Park N-Olive 345 kV line to create a University Park N-Green Acres-Olive and St. John-Olive 345 kV lines. **(B3775.1)** – NEET ($1.98 M)
- Reconductor NEET's section of Crete(IN/IL border)-St. John 345 kV line (6.95 miles) (conversion of part of S2631). **(B3775.2)**– NEET ($1.99 M)
- Rebuild ComEd's section of 345 kV double circuit in IL from St. John to Crete (5 miles) with twin bundled 1277 ACAR conductor. **(B3775.3)** – ComEd ($16.64 M)
- Rebuild 12.7 miles of 345 kV double circuit extending from Crete to E. Frankfort with twin bundled 1277 ACAR conductor. **(B3775.4)**– ComEd ($42.28 M)
- Replace E. Frankfort 345 kV circuit breaker "9-14" with 3150A SF6 circuit breaker. **(B3775.5)**– ComEd ($3.27 M)
- Perform sag study mitigation work on the Dumont-Stillwell 345 kV line (remove a center-pivot irrigation system from under the line, allowing for the normal and emergency ratings of the line to increase). **(B3775.6)**– AEP ($0.22 M)
- Upgrade the limiting element at Stillwell or Dumont substation to increase the rating of the Stillwell-Dumont 345 kV line to match conductor rating. **(B3775.7)**– AEP ($2 M)

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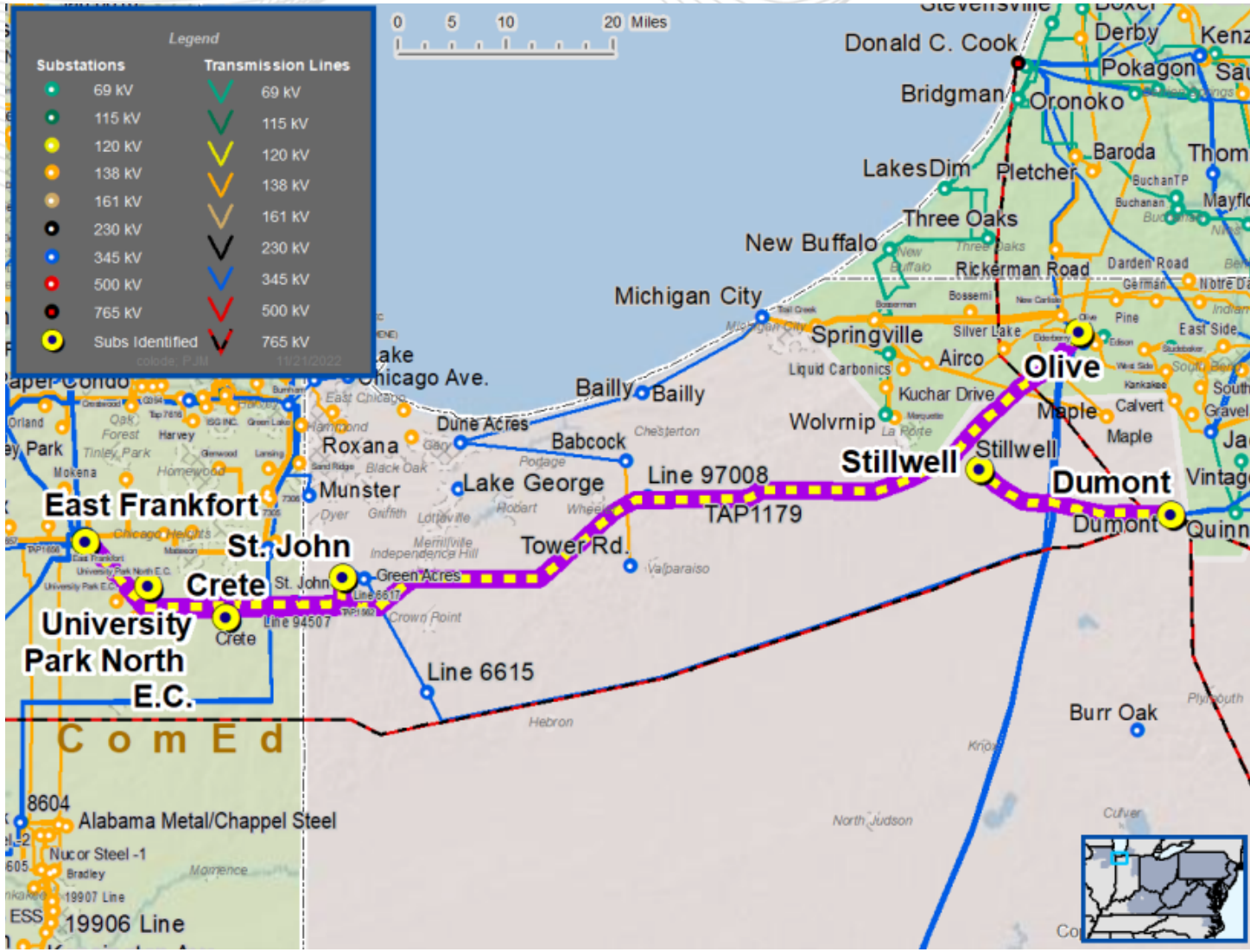


ComEd Transmission Zone: Baseline Crete-St. John 345 kV Area Improvement

Recommended Solution: (continued from previous slide)

- Upgrade the existing terminal equipment (substation conductor) at St. John on the existing Crete to St. John 345 kV line with bundled 2x1590 ACSR Lapwing **(B3775.8)** – NIPSCO* ($2 M)
- Upgrade the existing terminal equipment (substation conductor) at Green Acres on the existing St. John to Green Acres 345 kV line with bundled 2x1590 ACSR Lapwing **(B3775.9)** – NIPSCO* ($2 M)
- Perform a sag study on the Olive – University Park 345kV line to increase the operating temperature to 225 F. Remediation work includes two tower replacements on the line. **(B3775.10)** – AEP ($1.5 M)

* NEET will be designated to coordinate with NIPSCO to construct the work required on NIPSCO

Market Efficiency Benefits:

- B/C Ratio: 1.99
- Congestion solved: 87%
- 15-years Net Load Payment Savings: $169.83 million
- 15-years PJM CO2 Decrease: 556,740 metric tons

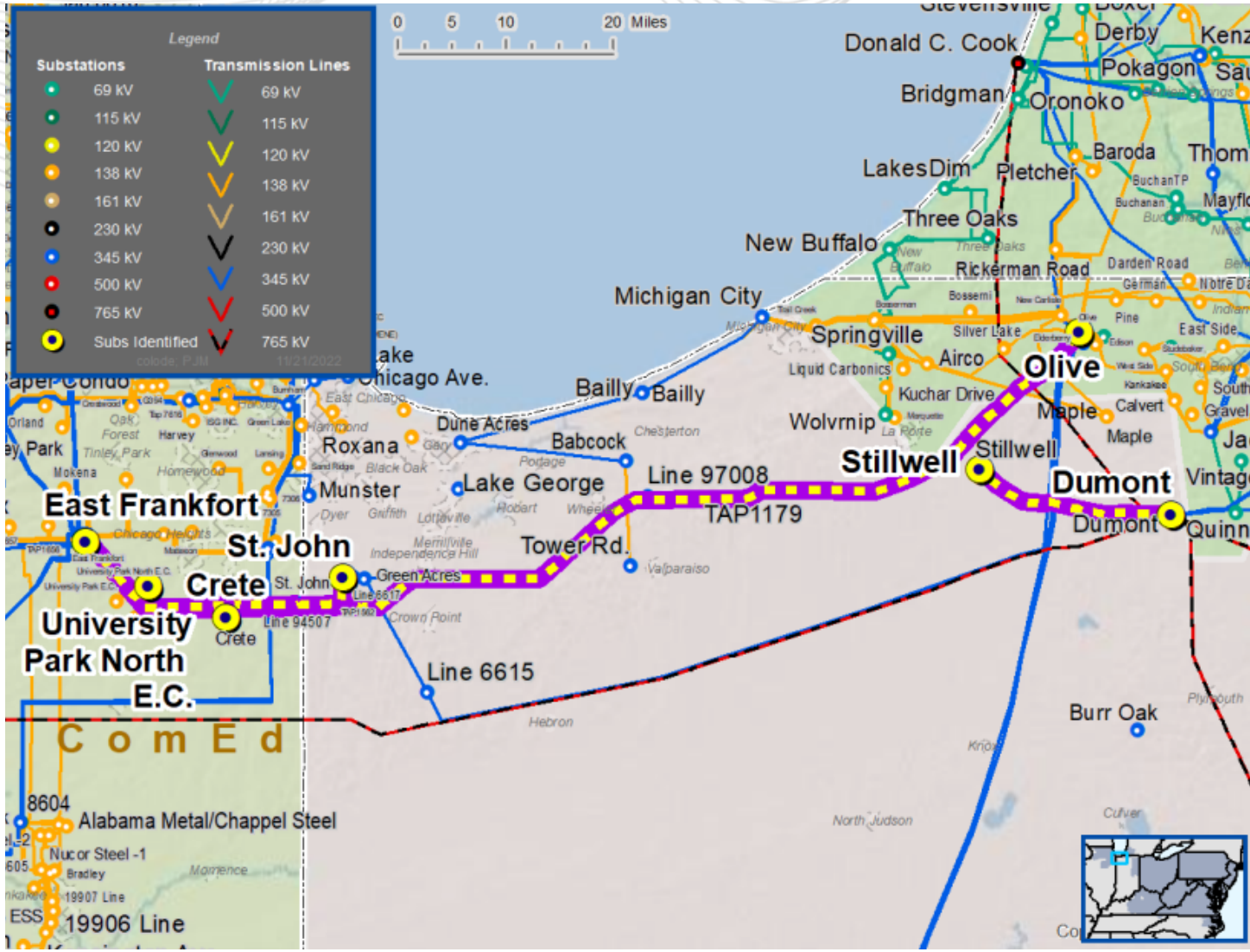
Additional Benefits: Addresses aging infrastructure on ComEd's section of Crete-St. John 345 kV double circuit (5 miles), NEET's section of Crete-St. John 345 kV line (6.95 miles) and ComEd's 345 kV double circuit extending from Crete to East Frankfort (12.7 miles).

Total Estimated Cost: $73.88 M

Required IS Date: 12/1/2026

Projected IS Date: 12/1/2026

Previously Presented: 12/6/2022



ComEd Transmission Zone: Baseline Crete-St. John 345 kV Area Improvement

SN/SE/WN/WE (MVA) Ratings

Facility	Existing	Preliminary
Stillwell-Dumont 345 kV	1075/1075/1532/1532	1408/1887/1780/2143

SN/SE/SSTE/SLD
WN/WE/WSTE/WLD (MVA) Ratings

Facility	Existing	Preliminary
Crete-St. John 345 kV	1091/1399/1483/1508 1310/1557/1658/1772	1679/2058/2107/2280 2091/2381/2390/2390
E. Frankfort-Crete 345 kV	1091/1399/1483/1674 1310/1557/1658/1873	1679/2058/2107/2280 2091/2381/2445/2648
E. Frankfort-University Park N 345 kV	1091/1399/1483/1674 1310/1557/1658/1873	1679/2058/2107/2280 2091/2381/2445/2648
University Park N-Olive 345 kV	971/971/971/1001 1234/1234/1234/1272	N/A
St. John-Olive 345 kV	N/A	971/971/971/1001 1234/1234/1234/1272
University Park N - Green Acre Tap West 345 kV	N/A	1679/2004/2107/2280 1976/2142/2445/2648
Green Acre Tap West - Green Acre 345 kV	N/A	1958/2390/2390/2390 2239/2390/2390/2390
Green Acre-Green Acre Tap East 345 kV	N/A	1091/1091/1091/1195 1195/1195/1195/1195
Green Acre Tap East -Olive 345 kV	N/A	971/1079/1079/1112 1234/1310/1310/1350

NP* = Not Provided; **Note**: Ratings in table are as provided in modeling files.

SN/SE/SSTE/SLD: Summer Normal/Summer Emergency/Summer Short Term Emergency/ Summer Load Dump
WN/WE/WSTE/WLD: Winter Normal/Winter Emergency/Winter Short Term Emergency/Winter Load Dump

Appendix A

2022 RTEP Multi-Driver Window 1

Individual Proposal Screening Results

Market Efficiency Analysis - Individual Proposals

Proposal ID#	Proposal Description	Type	2027 Unsolved Cong.* ($M)	2027 % Cong. Solved	Comments
40	Swap 345kV line at Green Acres, rebuild University Park to Olive 345kV and add reactor to Crete- St John 345kV line.	Upgrade	2.71	85%	Proposal leaves some congestion on E. Frankfort-Univ. Park.
82	Add new 345 kV double circuit to tap existing lines and connect to an existing sub; reconfigure existing lines at the sub.	Greenfield	6.51	63%	Proposal leaves significant congestion on new line Olive-St John.
91	Goodenow-Lemon Lake 345kV Greenfield Line and Stations (Enhanced).	Greenfield	14.51	15%	Proposal leaves significant congestion on Dumont-Stillwell.
165	Dumont-Stillwell Sag Study.	Upgrade	13.07	24%	Proposal addresses Dumont-Stillwell congestion only.
253	Rebuild 345 kV Lines 6607/6608 East Frankfort - Crete and 94507/97008 Crete - St. John.	Upgrade	16.7	2%	Proposal leaves significant congestion on Dumont-Stillwell and Olive-University Park.
401	Add a new 345kV double circuit to reconfigure existing lines.	Greenfield	8.43	51%	Proposal leaves significant congestion on Olive-University Park and shifts congestion to St John-Green Acre NIPSCO line.
541	Tap Olive–Green Acres 345 kV and Olive-University Park 345 kV into new 4-breaker ring station (Peregrine Ditch 345 kV).	Greenfield	17.16	0%	Proposal leaves significant congestion on Dumont-Stillwell.

**Congestion in the COMED-NIPSCO-AEP area left unsolved or shifted to nearby constraints.*

Note: Base Case 2027 Total Congestion in the COMED-NIPSCO-AEP area is $16.90M.

Market Efficiency Analysis - Individual Proposals (cont)

Proposal ID#	Proposal Description	Type	2027 Unsolved Cong.* ($M)	2027 % Cong. Solved	Comments
597	Goodenow-Lemon Lake 345kV Greenfield Line and Stations (Robust).	Greenfield	14.6	15%	Proposal leaves significant congestion on Dumont-Stillwell.
612	Goodenow-Lemon Lake 345kV Greenfield Line and Stations (Basic).	Greenfield	14.61	15%	Proposal leaves significant congestion on Dumont-Stillwell.
644	Swap 345kV transmission line at Green Acres, rebuild University Park to Olive 345kV lines.	Upgrade	2.42	87%	Proposal shifts some congestion to new line Olive-St John.
664	Add a new 345 kV double circuit line looping the existing line into a new substation.	Greenfield	8.04	54%	Proposal leaves significant congestion on new line Olive-Stateline.
908	Olive-University Park Sag Study.	Upgrade	15.95	7%	Proposal addresses Dumont-Stillwell congestion only.
994	Install Series Inductor on Line 94507 Crete - St. John.	Upgrade	18.37	0%	Proposal leaves significant congestion on Dumont-Stillwell. Increases flows and congestion on Olive-University Park.

**Congestion in the COMED-NIPSCO-AEP area left unsolved or shifted to nearby constraints.*

Most individual proposals leave significant congestion on Dumont-Stillwell and/or Olive-University Park and will benefit from combining with sag studies.

Appendix B

2022 Multi-Driver Window 1

Recommended solution #644 + #908

Market Efficiency Sensitivities (Informational Only)

Selected Solution – Market Efficiency Sensitivities

- Sensitivity Analysis of Combination Proposal #644 and #908

Proposal Combo ID#	Sensitivity	BC Ratio
644 + 908	Base Case	1.99
644 + 908	Low Load Forecast (-2%)	1.82
644 + 908	High Load Forecast (+2%)	1.00
644 + 908	Low Gas Forecast (-20%)	0.21
644 + 908	High Gas Forecast (+20%)	3.42
644 + 908	FSA Generation	4.31

Revision History

Version No.	Date	Description
1	1/6/2023	• Original slides posted