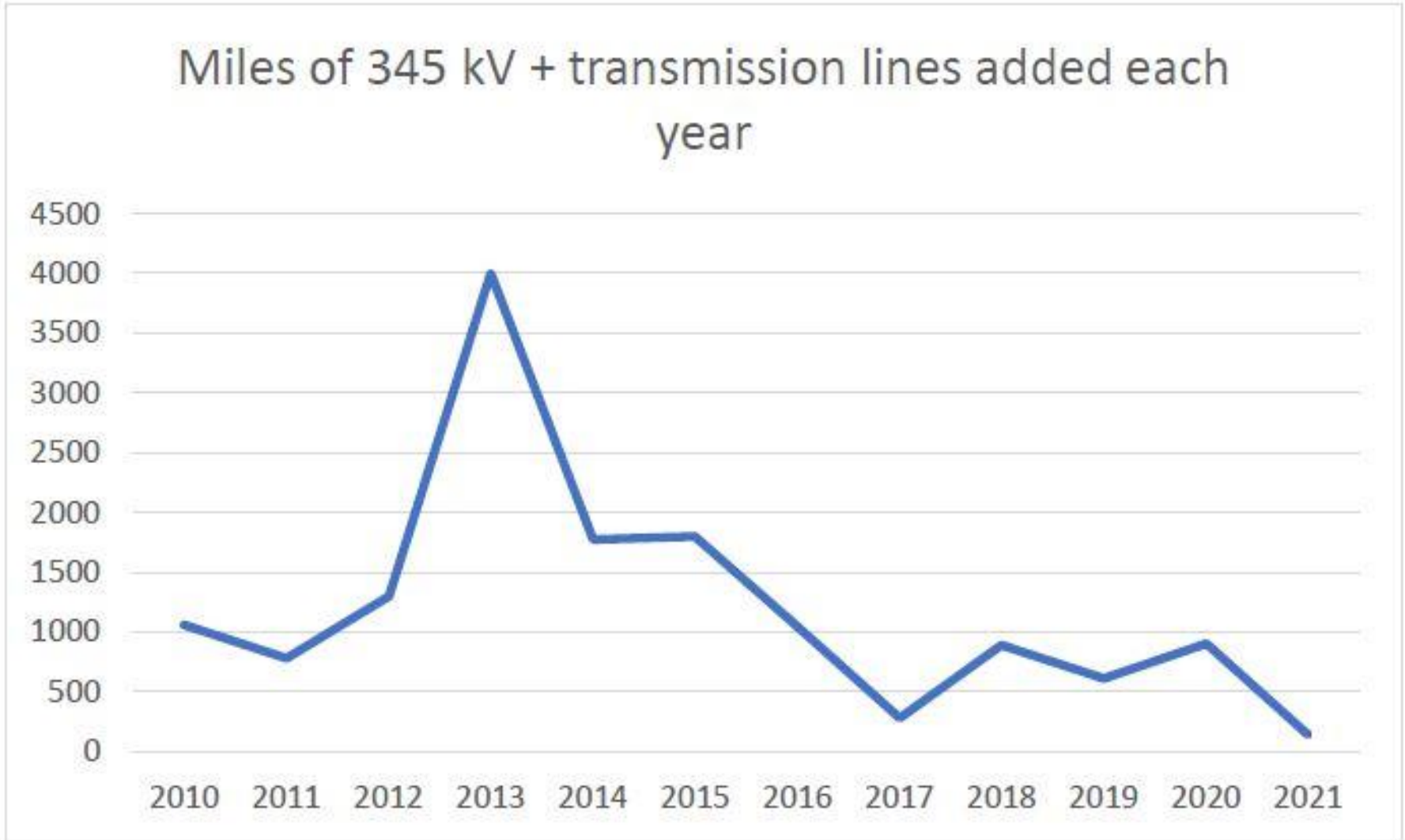
(Mostly) Legal Transmission Solutions

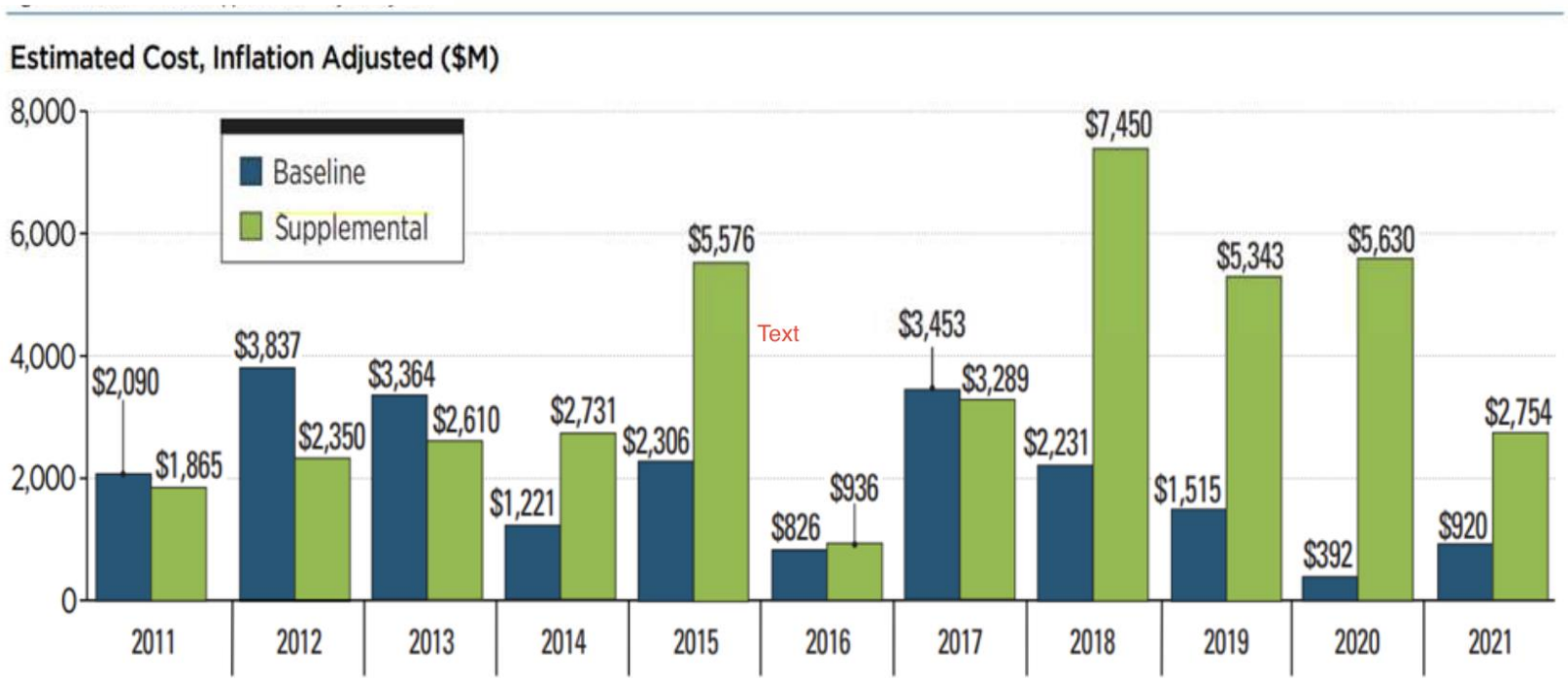
Transmission Benefits

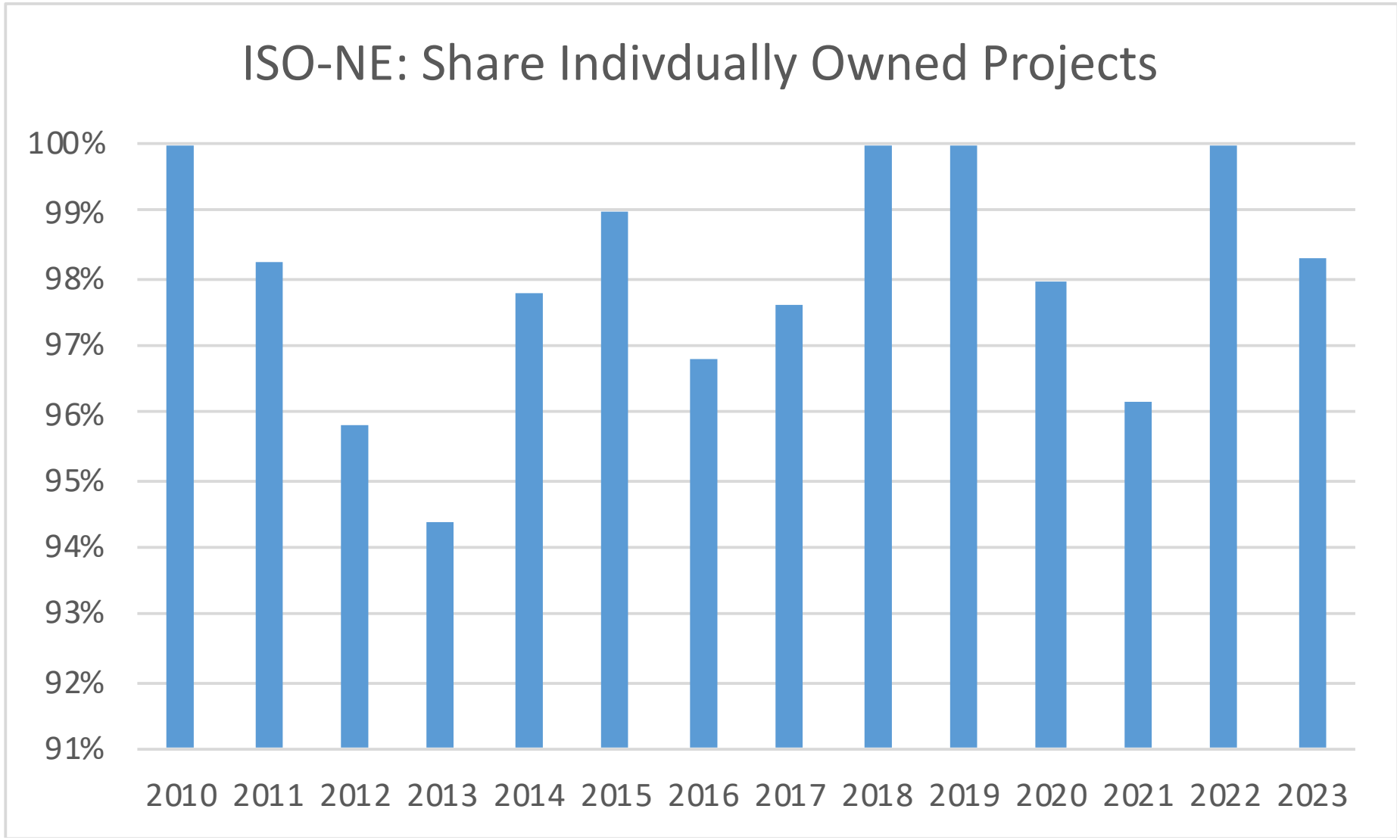
- U.S needs to (at least!) double transmission capacity to meet climate goals
- Transmission reduces electricity prices
- Transmission improves reliability
- U.S. spending TONS of money on transmission ($25 bn in 2020), but it is building the wrong kind of transmission

Figure 1: Declining investment in large scale transmission[12]



PJM Baseline and Supplemental Projects




ISO-NE: Share Indivdually Owned Projects
100%
99%
98%
97%
96%
95%
94%
93%
92%
91%
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
2021
2022
2023

Transmission Policy

- U.S. has (accidentally) outsourced transmission planning to companies that have incentive and ability to build costly lines that do not support reliability or support climate goals
- Siting favors incumbents

Causes of Transmission Planning Failures

1. Vertically-integrated utilities do not want to build transmission that exposes their generating units to competition
2. Vertically-integrated utilities would prefer to build (and rate base!) local lines because doing so avoids competition with merchant TOs
3. Regulatory gaps allow TOs to build local lines without undergoing meaningful regulatory scrutiny, whereas merchant lines get bogged down in siting disputes

Transmission

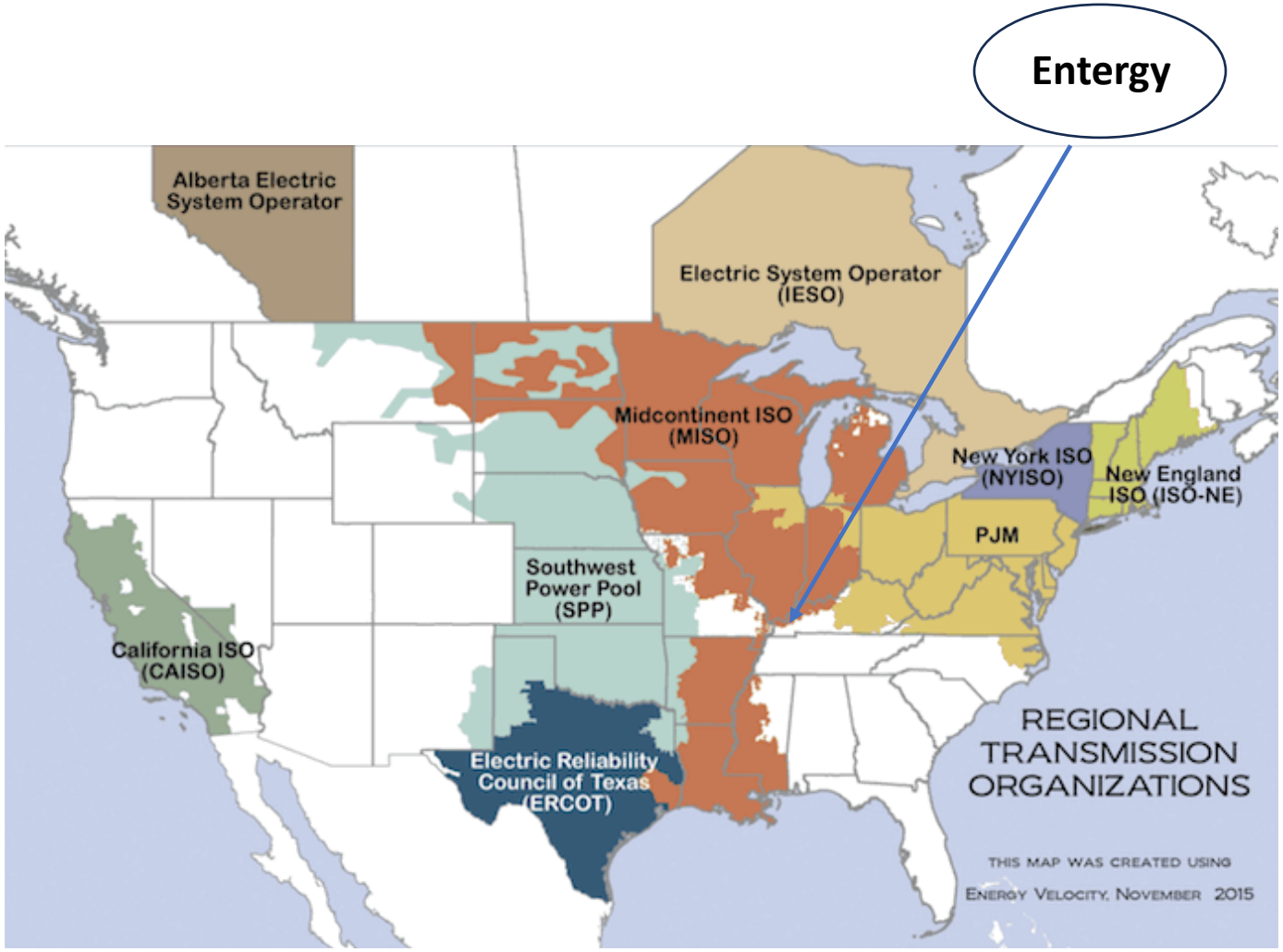
- Order 1000 (2011) required regional planning BUT:
    1. Declined to require competitive solicitations "for upgrades to existing transmission facilities and local transmission facilities" or
    2. For any "local transmission solution that is not eligible for regional cost allocation to meet its reliability needs or service obligations in its own retail distribution service territory or footprint."

Mandate for Regional Projects

1. "[T]he RTO must have ultimate responsibility for both transmission planning and expansion within its region that will enable it to provide efficient, reliable and non-discriminatory service and coordinate such efforts with the appropriate state authorities."-- Order No. 2000
2. "The rationale for this requirement is that a single entity must coordinate these actions to ensure a least cost outcome that maintains or improves existing reliability levels. In the absence of a single entity performing these functions, there is a danger that separate transmission investments will work at cross purposes and possibly even hurt reliability." –id.

Transmission

1. Transmission planning today looks nothing like the process envisioned in Order No. 1000
2. Almost all transmission constructed locally, without competition or regulatory oversight
   a. No Order No. 1000 projects in non-RTO regions;
   b. ~90% of projects in PJM planned outside regional process;
   c. No true regional projects in MISO since Entergy joined;
   d. 63% of new transmission projects in Cal. undergoes virtually no regulatory review.


Entergy
Alberta Electric System Operator
Electric System Operator (IESO)
Midcontinent ISO (MISO)
New York ISO (NYISO)
New England ISO (ISO-NE)
PJM
Southwest Power Pool (SPP)
California ISO (CAISO)
Electric Reliability Council of Texas (ERCOT)
REGIONAL TRANSMISSION ORGANIZATIONS
THIS MAP WAS CREATED USING
ENERGY VELOCITY, NOVEMBER 2015

Entergy and Market Power

1. During Hurricane Ida, power outages were more prevalent in MISO South than in MISO North
2. All eight of Entergy's lines went down, and some parts of LA suffered outages for over a month
3. Grid repairs cost ~$4.4 bn (~1/3 of costs of MISO LRTP)
4. Herfindahl-Hirschman Index (HHI) is measure of market power. An HHI of less than 1000 is generally considered low, while an HHI higher than 1800 is considered high. Market concentration is low in overall MISO area but very high in some local areas, such as WUMS (3881) and the South Region [Entergy] (4110), where a single supplier [Entergy] operates more than 60 percent of the generation.

Entergy and Market Power

1. Lack of transfer capacity used to justify new generation
    1. Entergy cited lack of transmission to prove need for New Orleans Power Station (Louisiana), St. Charles CCGT (Louisiana) and the Montgomery County CCGT (Texas)).
2. In the MTEP16, MISO identified the Churchill to Waterford 230kV transmission project in Louisiana as a beneficial project.
3. MISO found that project could provide a 3-to-1 benefit to cost (BC) ratio, meaning that for every $1 spent, the transmission project was anticipated to provide $3 in benefits.
4. A year before the project was slated to begin construction, MISO announced that the project would not go forward because it was no longer justified.
5. MISO cited three projects, including the new 980-megawatt (MW) Saint Charles Combined Cycle Gas Turbine as the identified system changes that affected the BC ratio.
6. **A $108 million economic transmission project was cancelled in favor of a $870 million power plant.**

PJM Review of Local Projects

Projects not planned by PJM may be built by Transmission Owners if they fall into the following categories:

1. Asset Management Projects: "any modification or replacement of a Transmission Owner's Transmission Facilities . . . undertaken to perform maintenance, repair, and replacement work, to address an EOL Need, or to effect infrastructure security, system reliability, and automation projects the Transmission Owner undertakes to maintain its existing electric transmission system and meet regulatory compliance requirements."
2. Supplemental Projects (local needs)
3. Any other transmission expansion or enhancement of Transmission Facilities that is not planned by PJM

PJM Review of Local Projects

- Committees must have "meaningful opportunity to participate and provide feedback, including written comments, throughout the transmission planning process for Attachment M-3 [non-regional] Projects."
- A Subregional RTEP Committee must "review the criteria, assumptions, and models Transmission Owners propose to use to plan and identify Attachment M-3 Projects."

--PJM, Attachment M-3: Additional Procedures for Planning Supplemental Projects and Asset Management Projects, https://pjm.com/directory/merged-tariffs/oatt.pdf

PJM Review of Local Projects

- PJM M-3 process creates a regulatory gap
- As a result, most projects undergo (basically) no regulatory scrutiny
- TOs propose criteria for projects
- They explain why they building a project and issue needs statement
- PJM applies "do no harm analysis"
  - Will the project "result in other reliability criteria violations"
  - Does an existing Baseline Reliability Project already meet the identified need
- Does not consider whether alternatives would more effectively meet the need, or whether the utility is taking adequate measures to control its costs.

PJM Review of Local Projects

1. Most recent TO responses for more data:
   a. "Operational flexibility and efficiency"
   b. "Transmission line has experienced poor performance"
2. No information about what criteria the outages violated, whether the number of outages is within a normal range, how it compares to other line performance, whether and why the solution needs to be prioritized, or any other relevant material information

CPCN Laws

1. North Carolina: no CPCN if line < 161 kV, if built on existing right of way, or if upgrade to existing line
2. California: need CPCN only if line > 200 kV, and not if replacing existing line
   - 63% of transmission spending in Cal. do not receive CPCN
3. In non-RTO regions, no plan has been constructed under regional process since Order No. 1000

CPCN Laws

North Carolina: A certificate is not required for construction of the following lines:

(1) A line designed to carry less than 161 kilovolts;

(2) The replacement or expansion of an existing line with a similar line in substantially the same location, or the rebuilding, upgrading, modifying, modernizing, or reconstructing of an existing line for the purpose of increasing capacity or widening an existing right-of-way;

--**N.C. Gen. Stat. § 62-101**

California:

"No electric public utility shall begin construction in this state of any electric power line facilities or substations which are designed for immediate or eventual operation at any voltage between **50 kV or 200 kV or new or upgraded substations with high side voltage exceeding 50 kV without this Commission's having first authorized the construction of said facilities by issuance of a permit to construct** in accordance with the provisions of Sections IX.B, X, and X1.B of this General Order. An upgraded substation is one in which there is an increase in substation land area beyond the existing utility-owned property or an increase in the voltage rating of the substation above 50 kV.

--CPUC General Order 131-D

CPCN Laws

Maine: "Except as otherwise provided in subsection 3-A, whenever any person proposes to erect within this State a **transmission line capable of operating at 69 kilovolts or more**, that person shall file a petition for the approval of the proposed line[.]"

-- 35-A M.R.S.A. S 3132

CPCN Laws

Maine (cont'd):

- 1-b: "The construction of a generator interconnection transmission facility is not subject to the requirements of this section. For the purposes of this subsection, 'generator interconnection transmission facility' means a transmission line, together with all associated equipment and facilities, that is constructed, owned and operated by a generator of electricity solely for the purpose of electrically and physically interconnecting such generator to:
  - The transmission system of a transmission and distribution utility

-- 35-A M.R.S.A. S 3132

So What Should We Do?

- RTO and regional planning process is broken
- Ideally, willing buyers and sellers could transact in a marketplace
- We are far from that ideal
- So we need to plan, permit, and pay for transmission improves reliability, reduces costs, and supports state and federal decarbonization goals through existing authorities

So What Should We Do?

1. Sponsorship Model (competition for ideas)
   - Utilities
2. Solicitation Model
   - FERC / DOE / RTO identifies project and

Sponsorship and solicitation models can occur outside the RTO and regional planning processes, and FERC and DOE possess tools to resolve permitting, cost allocation, and planning challenges

So What Should We Do?

1. Turn DOE's Grid Deployment Office (GDO) into central planner
   a. Various appropriations bills gave DOE authority to support financing for new transmission
   b. Condemnation Act allows agencies to exercise eminent domain when building lines under certain circumstances
   c. Needs Study should be used as the basis of agency-led transmission planning
   d. Currently limited to ~$2.5 bn in lending
   e. Can allocate costs of lines
2. FERC could develop alternatives to RTO / regional planning processes
   a. Utilities propose NIETCs (sponsorship model) that are eligible for cost allocation (FPA 219b)
   b. Require RTOs and non-RTOs to consider interregional transfer capacity in planning
3. PMAs can supplement FERC and DOE

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DOE

• Could play planning role by proactively designating NIETCs where it determines a national need for new transmission lines and encouraging project development with related financing tools.	• Planning, no legislation
• Create a process for developers to propose NIETCs to address national needs.	• Planning, permitting, paying, no legislation
• Authorize cost recovery for lines that receive DOE financing and are built in NIETCs	• Paying, no legislation
• Sell its stakes in transmission projects it finances to make the most of its borrowing authority.	• Paying, no legislation
• Congress could appropriate additional funds that increase the scale of DOE GDO's financing support.	• Paying, legislation
• Congress could increase the federal financing options for transmission, including direct grants and tax credits.	• Paying, legislation
• Congress could pass legislation authorizing FERC or DOE to provide federal eminent domain for certain large-scale interstate transmission projects.	• Permitting, legislation
• Use eminent domain authorities for large-scale transmission lines by entering into public-private partnerships with developers under its Transmission Facilitation Program.	• Permitting, no legislation
• GDO could coordinate with FERC to provide transmission developers with federal siting authorities within NIETCs.	• Permitting, no legislation

FERC

• Create National Transmission Planning Authority and Independent Transmission Monitor	• Planning, no legislation
• Enact strong interregional planning rule	• Planning, no legislation
• Require existing planning processes to consider DOE Needs Study and benefits of interregional transfer capacity	• Planning, no legislation
• Far more oversight of existing regional planning.	• Planning, no legislation
• Increase financial incentives of regional planning and reduce incentives to invest in local lines	• Paying, no legislation
• Clarify that beneficiary pays is required under FPA	• Paying, no legislation
• Require utilities to provide more information about what lines they build, who pays, and what they considered during planning.	• Paying, no legislation
• Authorize cost recovery for lines in NIETCs under Section 219(b)(4)	• Permitting, no legislation
• Authorize ROE added for lines that provide greater national benefit under Section 219(c)	• Permitting, no legislation
• Aggressively use backstop siting authority under Section 216	• Permitting, no legislation
• Require RTOs and non-RTO regions to study the benefits of additional interregional transfer capability and consider these benefits in future transmission planning	• Planning, no legislation

PMAs

• Create a new Power Marketing Administration or similar entity to focus on national-scale transmission development.	• Planning, Permitting, Paying, legislation
• President and the Secretary of Energy could use their authorities to appoint Power Marketing Administration directors and board members favorable to transmission expansion	• Governance, no legislation
• Use Section 1222 authorities to partner with private developers to confer federal siting authority and build projects DOE finds are needed	• Permitting, no legislation
• DOE could fund studies of PMA transmission systems to identify upgrades and existing rights-of-ways that could be used to address regional transmission needs	• Permitting, legislation