North American Electricity Policy and Planning Harmonization: Background Papers Presentations

Alan Krupnick, Dan Shawhan, Phil Gass, Juan Carlos Belausteguigoitia, David Solan and Patrick Schaefer

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Electric Power in the US and Mexico: Opportunities for Transboundary Regulatory and Planning Harmonization
University of New Mexico, October 27, 2015

Background

- Huge technological, economic and policy changes in North American energy sectors are driving calls for more market and policy harmonization.
- DOE's Quadrennial Energy Report notes the need for examining challenges and opportunities to North American energy policy and market integration
- RFF and its partners at IISD and ITAM have an initiative on the same topic
- Hence, we are putting on this DOE-sponsored workshop after just finishing a similar one covering US-Canada harmonization (10/20)
- Summary will be written and delivered to DOE to use in the next QER on electricity and be distributed publicly (no attribution)

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Draft Background Papers

- Meant for participants only for now
- Four papers, two providing issues for the workshop discussions (*)
  - Key Harmonization Concepts
  - Environmental Policy Harmonization*
  - Operation and Planning Harmonization*
  - Data Sharing and Modeling

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Key Concepts

- Meaning of Harmonization
  - Ranges from notification and information sharing, through coordination, through aligning regulatory processes and regulations to full integration (as in a common market)
- Economic Benefits of Harmonization
  - Free trade
  - Efficient activity location
  - Lower transactions cost
  - Dynamic efficiency
  - Internalizing externalities
  - Policy demonstration

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Key Concepts, cont.

- Instruments of Harmonization
  - Not specific to electricity sector
  - Specific
    - Bilateral and trilateral (Regulatory Cooperation Councils)
    - MOUs to cooperative institutions to treaties
- Scope for the workshops
  - Regulatory lifecycle (e.g., benefit-cost analysis; enforcement))
  - Sectors: this workshop restricted to electricity
  - Geography: national governments, states; Not Caribbean

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Three Discussion Sessions Today

9:00 – 10:30	**Session 1: Greater Harmonization of System Operation, Reliability, and Investment**
9:00 – 9:25	Making Power Flows More Economically Efficient
9:25 – 9:50	Reliability Coordination
9:50 – 10:30	Attracting Investment
10:45 – 12:15	**Session 2: Planning and Approval of Cross-Border Transmission and Supply Investments**
10:45 – 11:10	Coordination of planning
11:10 – 11:35	Allocating cost recovery to rates on both sides of a border
11:35 – 12:00	Improving siting and approval/permitting processes for cross-border infrastructure
12:00 – 12:15	Workforce development opportunities
1:15 – 4:00	**Session 3: Opportunities for Environmental Regulatory Harmonization (Conventional Air Pollutants, Renewables and Climate Policy)**
1:15 – 2:00	Conventional Air Pollutants
2:00 – 3:00	Renewables Policies
3:15 – 4:00	Climate Policies

Greater Harmonization of System Operation, Reliability, and Investment

9:00–10:30 am

Discussion framers: Daniel Shawhan and Patrick Schaefer

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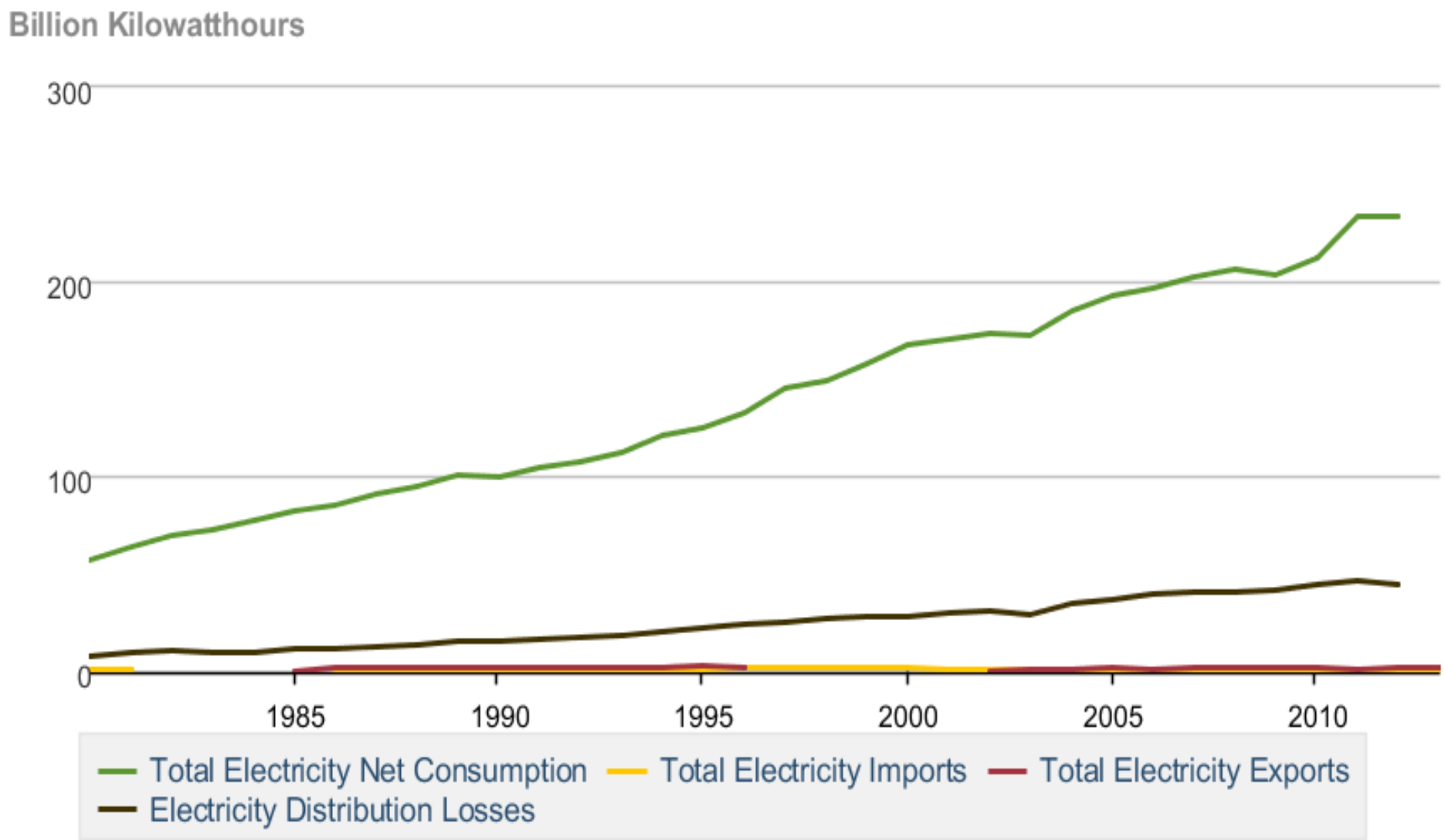
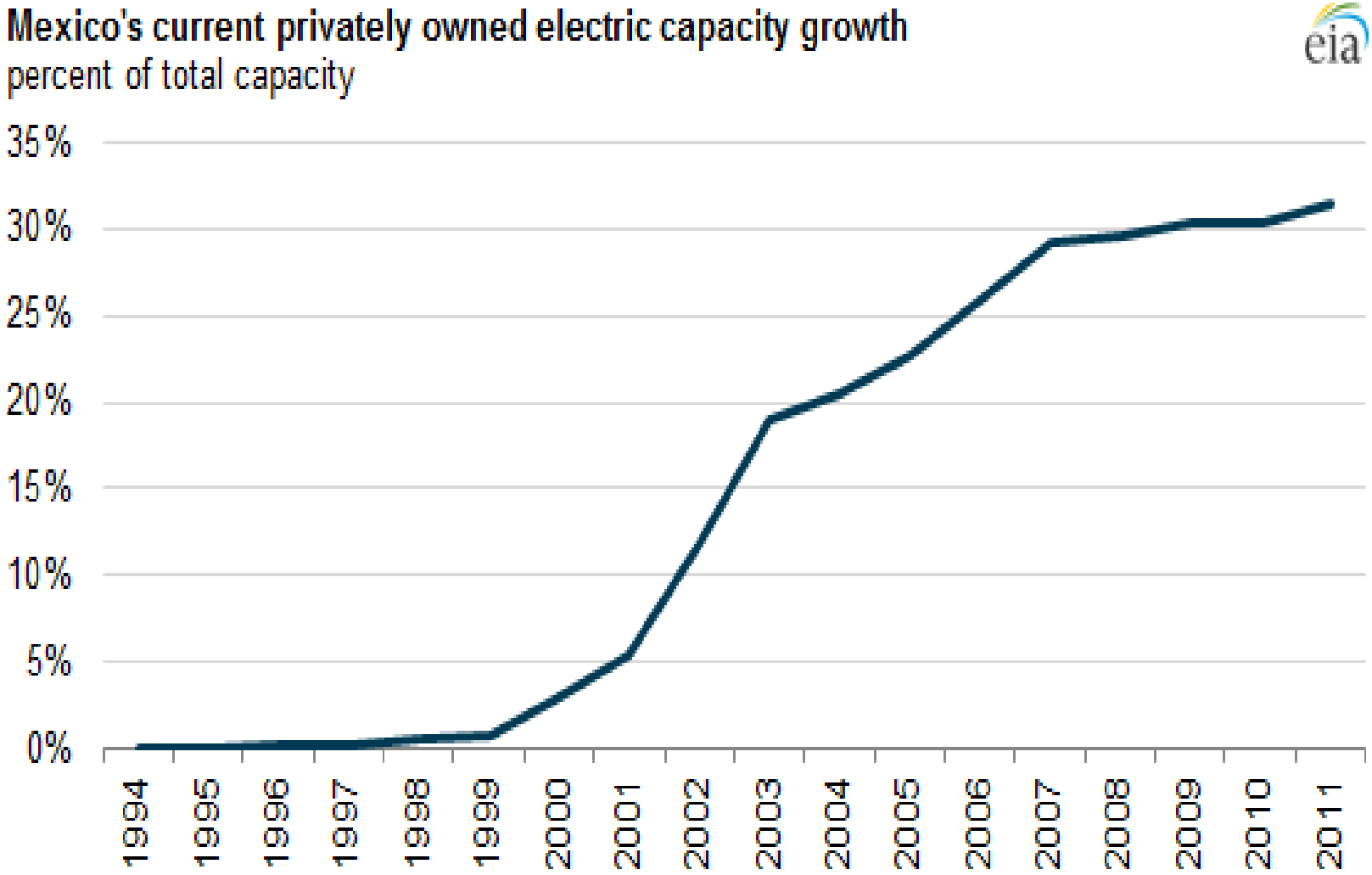
Consumption, Losses, Exports, and Imports of Electricity in Mexico



Source: U.S. Energy Information Administration

% of Mexico's Generation Capacity that is Privately Owned, thru 2011



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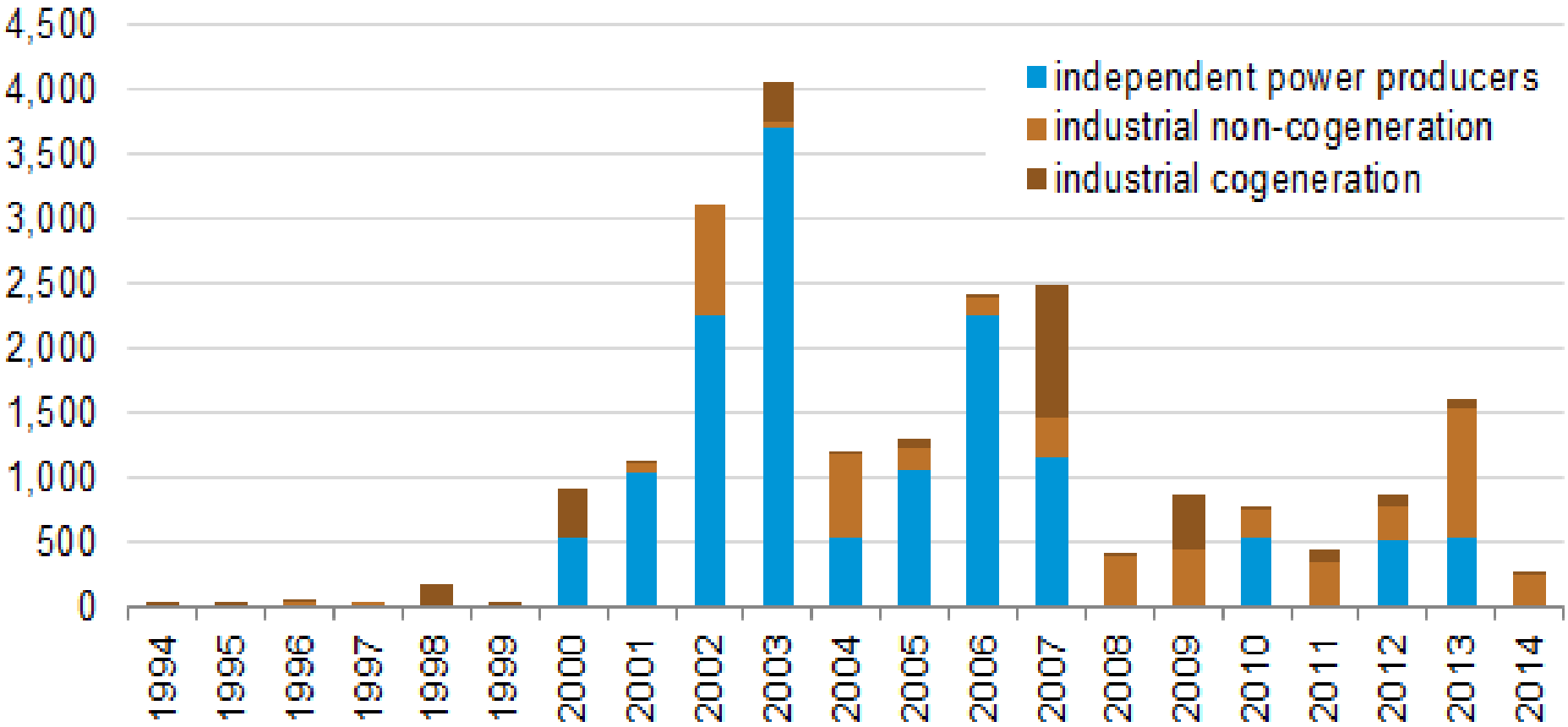
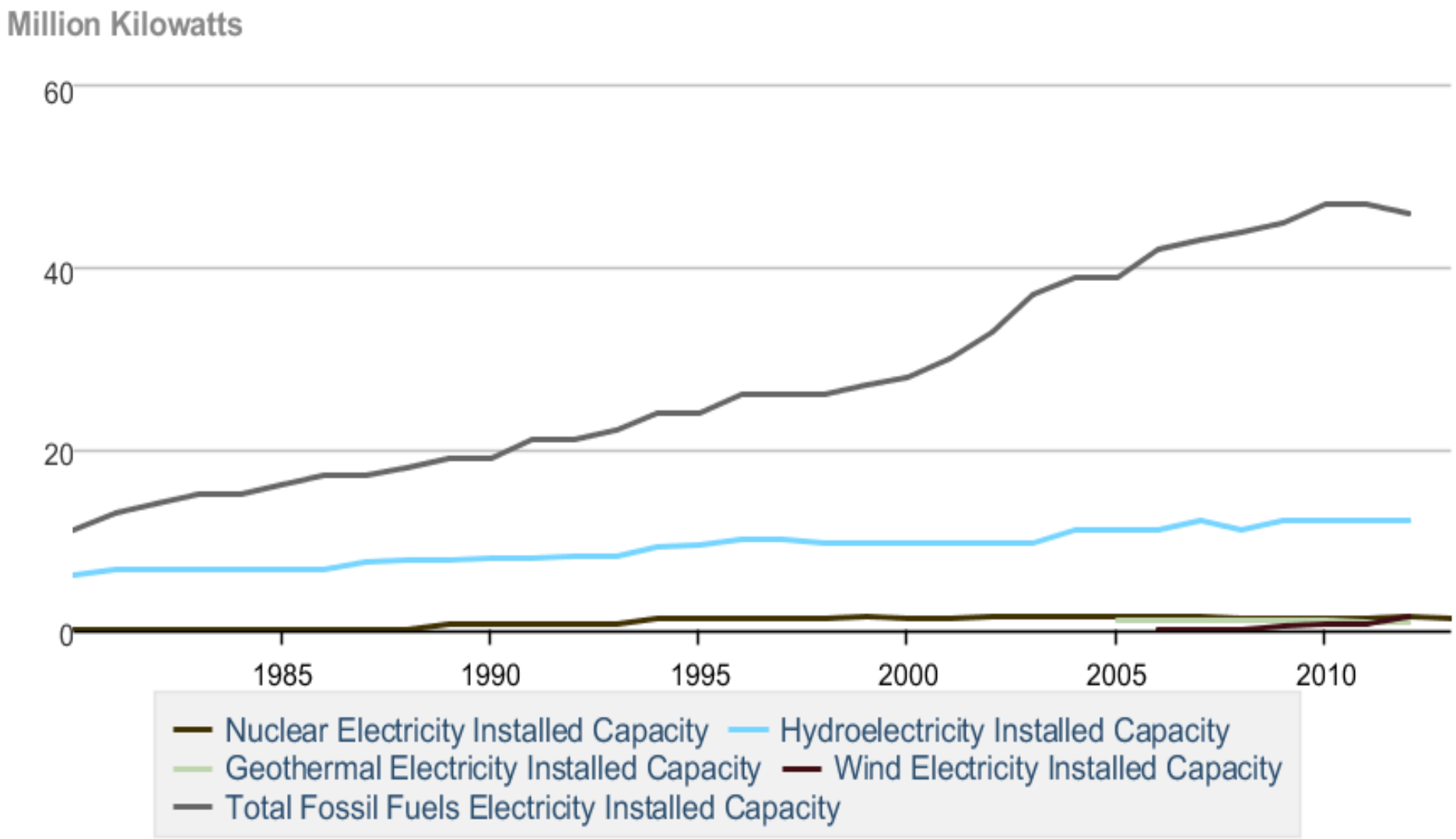
Privately owned electric capacity by installation year

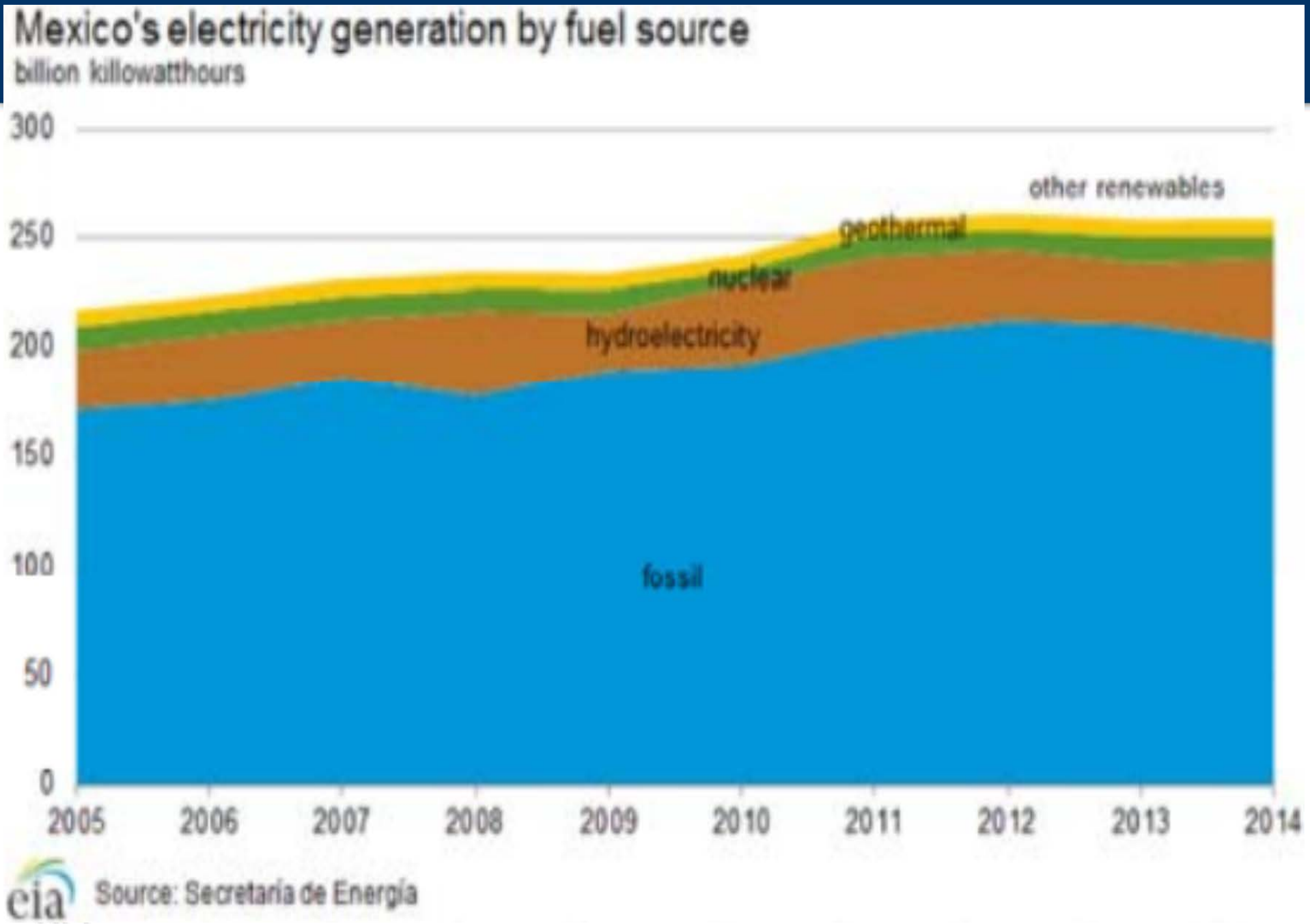
megawatts

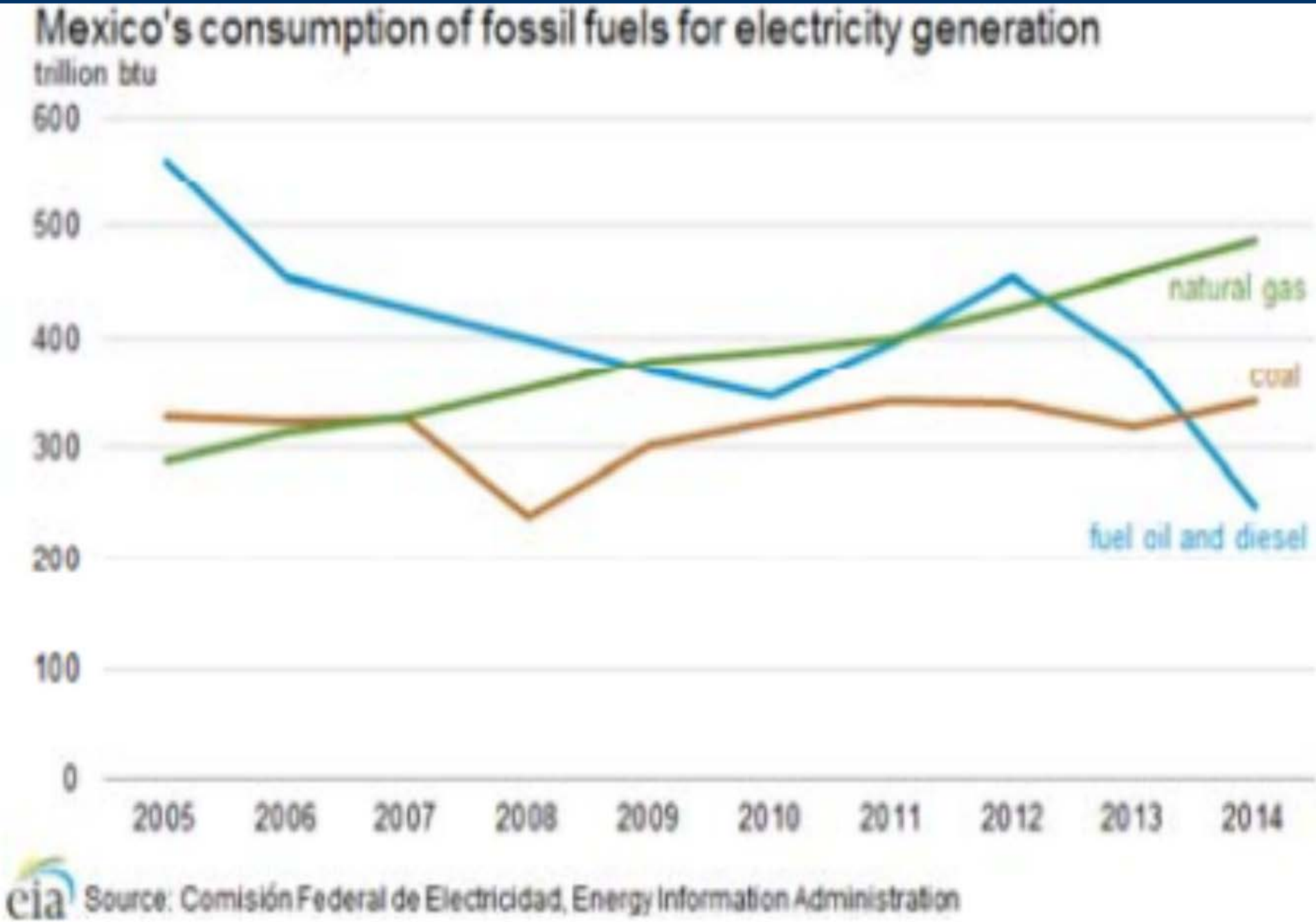


Mexico's Capacity: Mostly Fossil and Hydro, with Wind Small but Growing

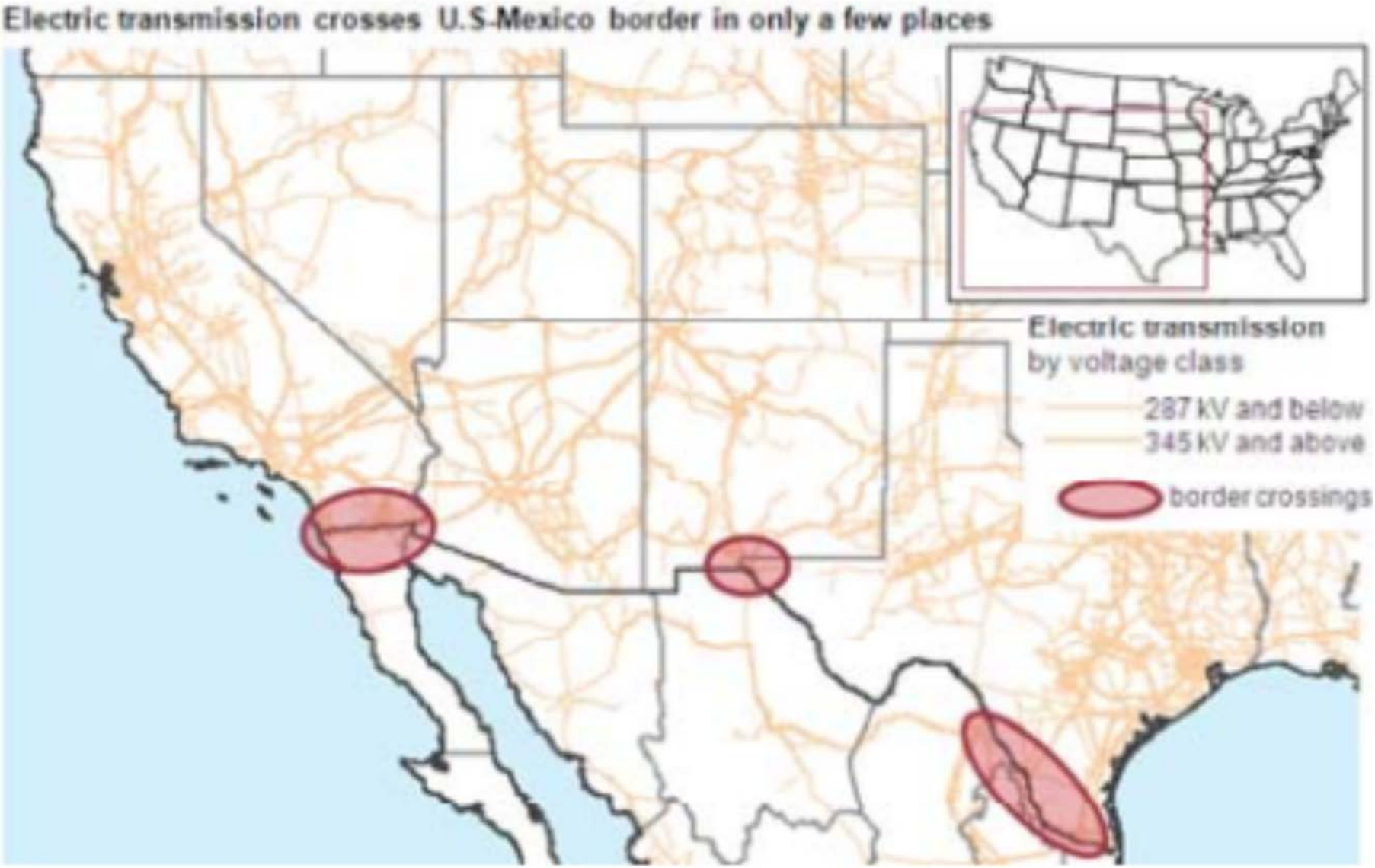


Source: U.S. Energy Information Administration


Mexico's electricity generation by fuel source
billion killowatthours
300
250
200
150
100
50
0
other renewables
geothermal
nuclear
hydroelectricity
fossil
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
eia
Source: Secretaría de Energía

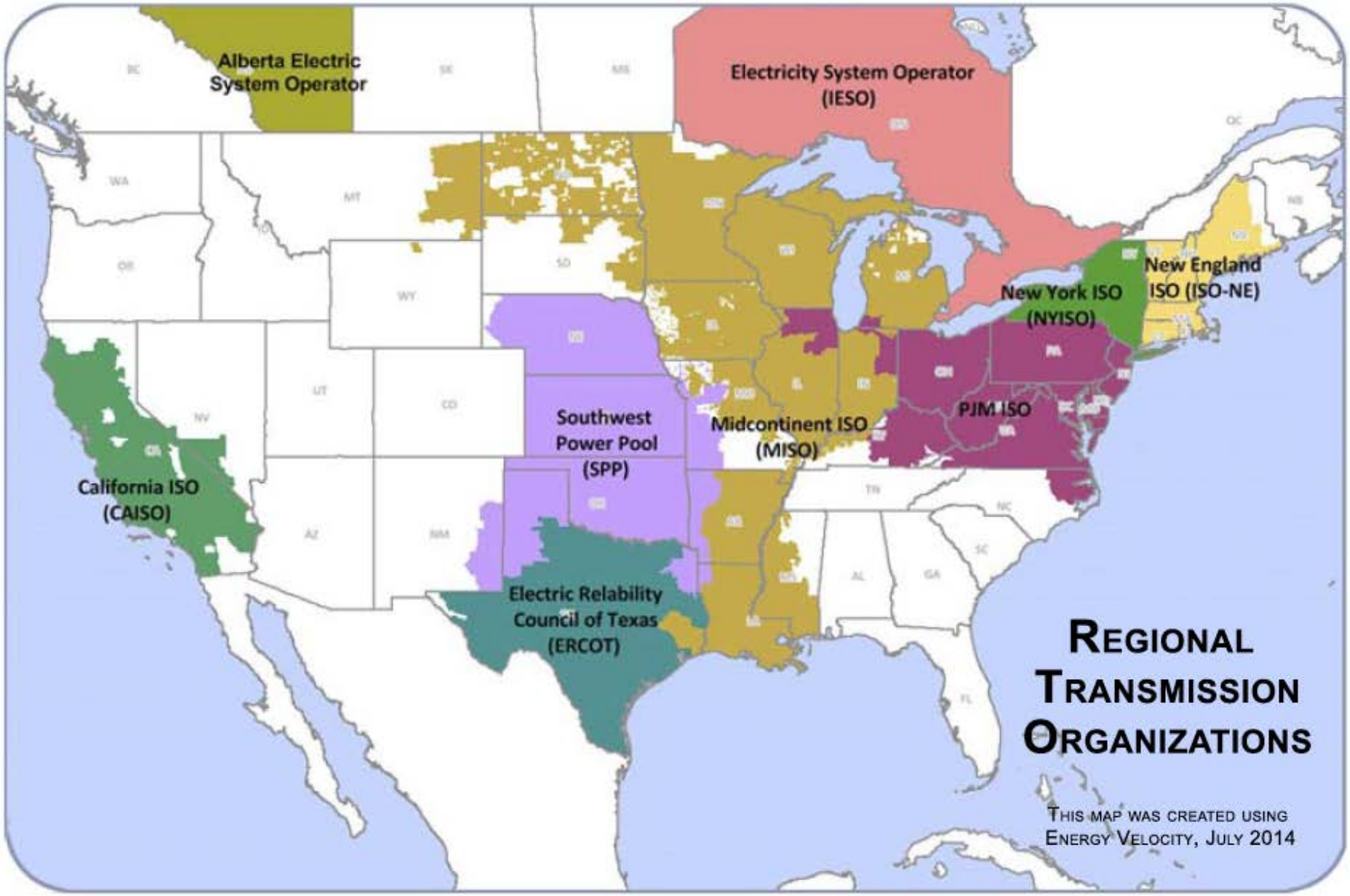

Mexico's consumption of fossil fuels for electricity generation
trillion btu
600
500
400
300
200
100
0
natural gas
coal
fuel oil and diesel
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
eia
Source: Comisión Federal de Electricidad, Energy Information Administration

Electric transmission crosses U.S.-Mexico border in only a few places

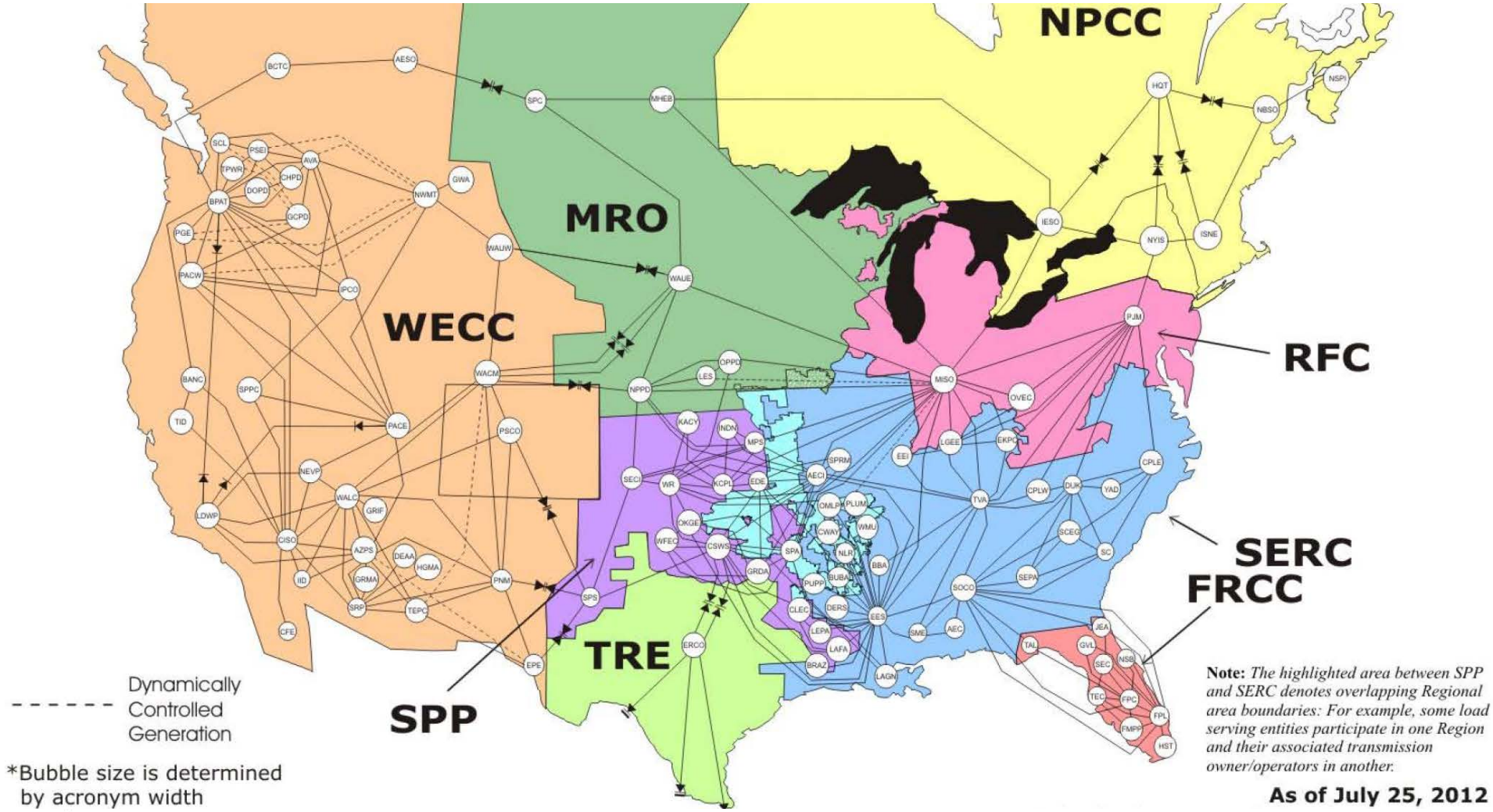


Source: U.S. Energy Information Administration

US RTOs: Two on the border with Mexico



US Control Areas: Six on the Border



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9:00–9:25 Economically efficient flows

Background: To minimize costs, power and ancillary services should be obtained from where they can be obtained least expensively, up to the physical and reliability limits of the system.

Question: **Where and how can the amounts of cross-border power flows be made more economically efficient?**

1. What and where are the greatest inefficiencies?
2. What would you say are the most promising opportunities for improvements?

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9:25–9:50: Reliability

9:25–9:50: Reliability

Background: The US and northern Baja comply with the North American Electric Reliability Corporation (NERC) and I've been told that the rest of Mexico is developing policies to do so.

Question: **What improvements in reliability coordination can be made across the border?**

a. Improvements in current coordination
b. Improvements in plans for future coordination

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9:50–10:10: Attracting Investment in Power Plants

- Mexico's new structure of generation industry:
  - Competitive, open electricity market with locational marginal prices
  - Market for generation capacity
  - Privately owned plants supply larger customers, government-owned plants supply smaller ones
- Texas (ERCOT) does not have a capacity market and its generation capacity is a bit below its target
- US capacity markets have not been securing firm capacity as intended

Question: **Are the market and investment rules likely to induce the construction of an economically efficient set of generators? What specific factors, if any, create a risk of inadequate or inefficient investment?** Let's talk about

a. Generators in Mexico
b. Generators in US

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9:50–10:10: Attracting Investment in Power Plants

Some factors that can result in inadequate generation investment:

- Market rules that keep electricity & capacity prices too low, or fear of such rules
- Fear that government-owned generators will offer electricity at below their marginal costs

Some factors that can result in inadequate availability of generators at times of greatest need:

- Capacity payments and scarcity prices of electricity, together, are not high enough
- Generators can receive capacity payments even if they fail to be available

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10:10–10:30: Attracting Investment in T&D

- Mexico's new rules for private transmission & distribution (T&D) investment:
  - Government intends to attract private investment.
  - Private investors will be able to finance and expand T&D in Mexico via joint ventures w/ state firms. Gov't will own the resulting infrastructure.
  - Investors will be subject to joint liability and a local content requirement for the construction of the projects.
- Texas recently built a large amount of transmission capacity.
- The rest of the US has difficulty building transmission capacity.

Question: **Do the rules seem likely to induce the construction of an economically efficient set of T&D system expansions?**
What specific factors, if any, create a risk of inadequate or inefficient investment? Let's talk about

a. T&D investment in Mexico
b. T&D investment in U.S.

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Greater Harmonization of Planning, Siting, and Approval Processes

10:45–12:15

Discussion framer: Daniel Shawhan

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10:45–11:10: Coordinated Planning of Transmission Expansion

Background:

- Coordination of decision-making about new transmission lines can make better options viable and can reduce time to approval. Here, “better” means higher combined expected net benefits for the two countries.

Questions:

a. **What is the nature of current U.S.-Mexico planning coordination, and what plans are there for future coordination?**

b. **What improvements can be made to the current coordination, and what improvements can be made to the plans for future coordination?**

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11:10–11:35: Infrastructure Cost Sharing

Background:

- The cost of a new transmission investment is often recovered partly through regulated charges on customer bills.
- Sometimes, a project is mostly in country A but many of those who benefit are in country B. Inability to allocate some of the cost to those in country B, or the inability to agree on how much of the cost should be recovered via their bills, can delay or prevent a project.

Questions about infrastructure investments with significant binational benefits:

a. What mechanisms are there for allocating some of the costs to customers on the other side of the border who benefit?

b. How can the ability to allocate costs on both sides of the border, in proportion to benefits, be improved?

c. How can the risk of unresolvable disagreements about cost sharing be reduced?

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11:35–12:00: Siting and Permitting

Background:

- Siting refers to route selection.
- Permitting refers to approval by governments.
- In the US, approvals can be required by federal, state/provincial, and local governments.
- Environmental Impact Assessments play a role, and the associated practices differ between the US and Mexico
- US and Canada are working at the national levels to improve processes. Are the U.S. and Mexico?

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Typical Flow for Approvals of Permits & Siting

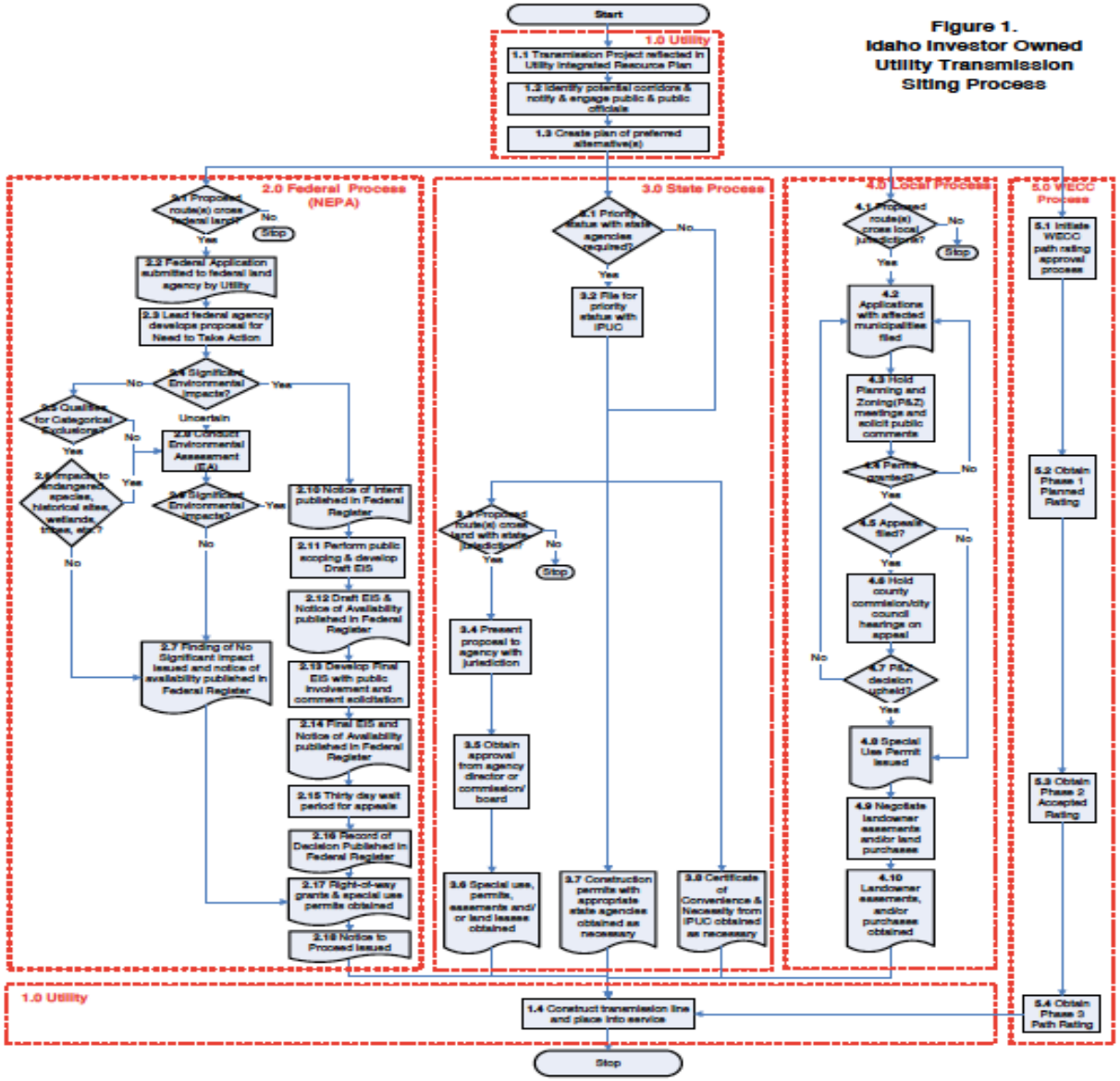

Figure 1.
Idaho Investor Owned Utility Transmission Siting Process

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11:35–12:00: Siting and Permitting

Questions:

a. **Which aspects of the countries' siting and permitting processes have the most room for improvement and alignment?**

b. **What means of improvement hold the most promise?**

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12:00–12:15: Workforce Development

Background: There is a shortage of suitably skilled workers for many of the current and anticipated electric power industry jobs

Question: **What actions (cross border) should be taken to improve the training and availability of workers for the jobs that will need to be filled?**

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Opportunities for Environmental Regulatory Harmonization (Conventional Air Pollutants, Renewables and Climate Policy)

Discussion framers: Alan Krupnick and Juan Carlos Belausteguigoitia

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Environmental Policy Harmonization (Krupnick, Gass, and Belausteguigoitia)

- Conventional Air Pollution Policy (SO_2, NOx, ozone, PM, toxics)
  - Domestic policies (Ambient standards, technological standards)
    - U.S. regional trading, offsets
    - Mexico: no tradable permit programs or NA areas; lax regulatory monitoring and enforcement
  - Addressing cross-border pollution through regulatory process (U.S. Sec 115 CAA) and institutionally (Clean Air Coalition; trilateral working group under CEC; Border 2020, Mexico and California agreement)

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Key Questions

- Are existing cross border institutions enough?
- Should cross-border trading be considered?
- Should regulatory processes include benefits and costs to neighbors?

Carbon Policy

- INDCs (US: 26% from 2005 by 2025; Mexico: 25% against 2030 BAU; conditional: 40% (include black carbon))
- Electricity-specific policies (US: CPP for existing sources; Mexico: Clean Energy Credits and oil to gas generation, carbon tax)
- Institutions: Mexico and California agreement
- Key Questions
  - Should next round of INDCs be a joint North American product?
  - Should there be any alignment of CO2 reduction policies in the electricity sectors?
  - Should Mexican sources by included in CPP? Regional programs?
  - What are the prospects for bilateral CO2 trading program? Carbon tax program

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Renewables

- Mexico's Clean Energy Credit program vs. U.S. array of state programs to mandate and federal programs to incentivize renewables
- Institutions: (In Mexico: BECC, NADB for finance)
- Key Questions
  - Should and how can renewables credit programs be extended across the border? In general and for CPP?
  - How important are softer harmonization issues: monitoring and enforcement systems, reporting systems, research advances, and institution strengthening? How to bring this about?

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