Infrastructure Planning and Financing is Key to Climate Success

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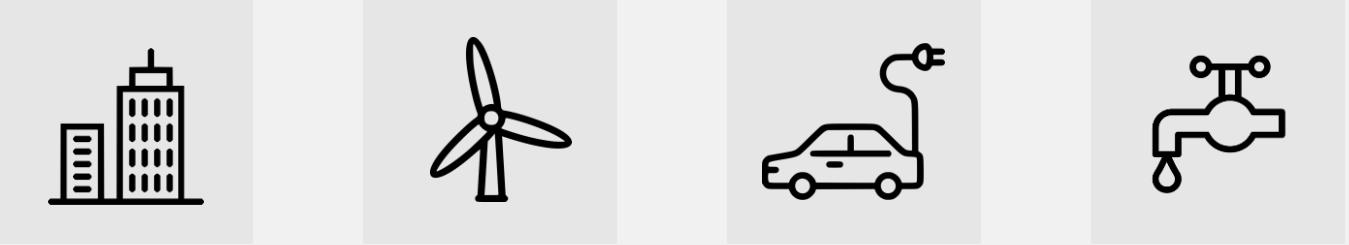
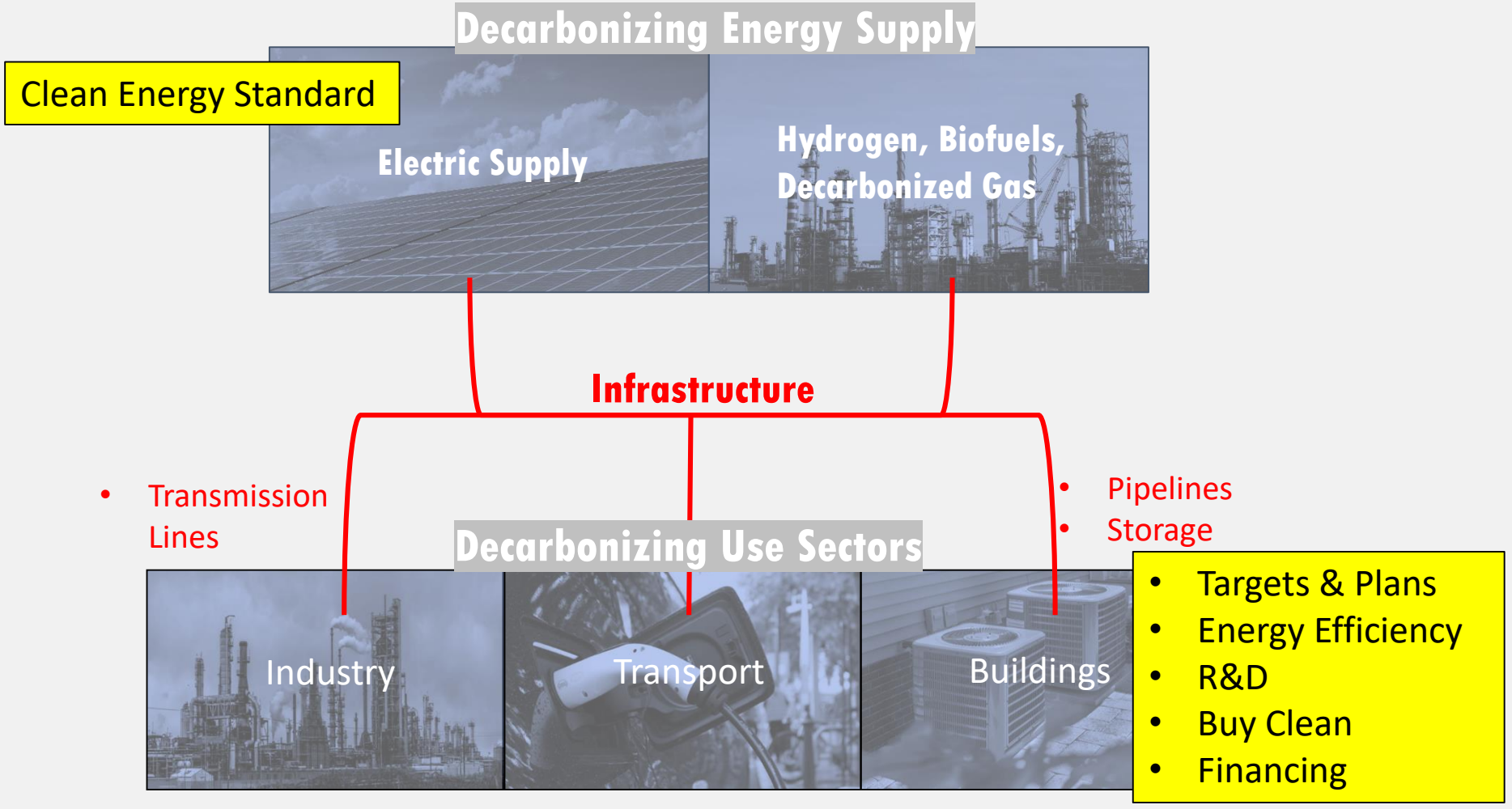
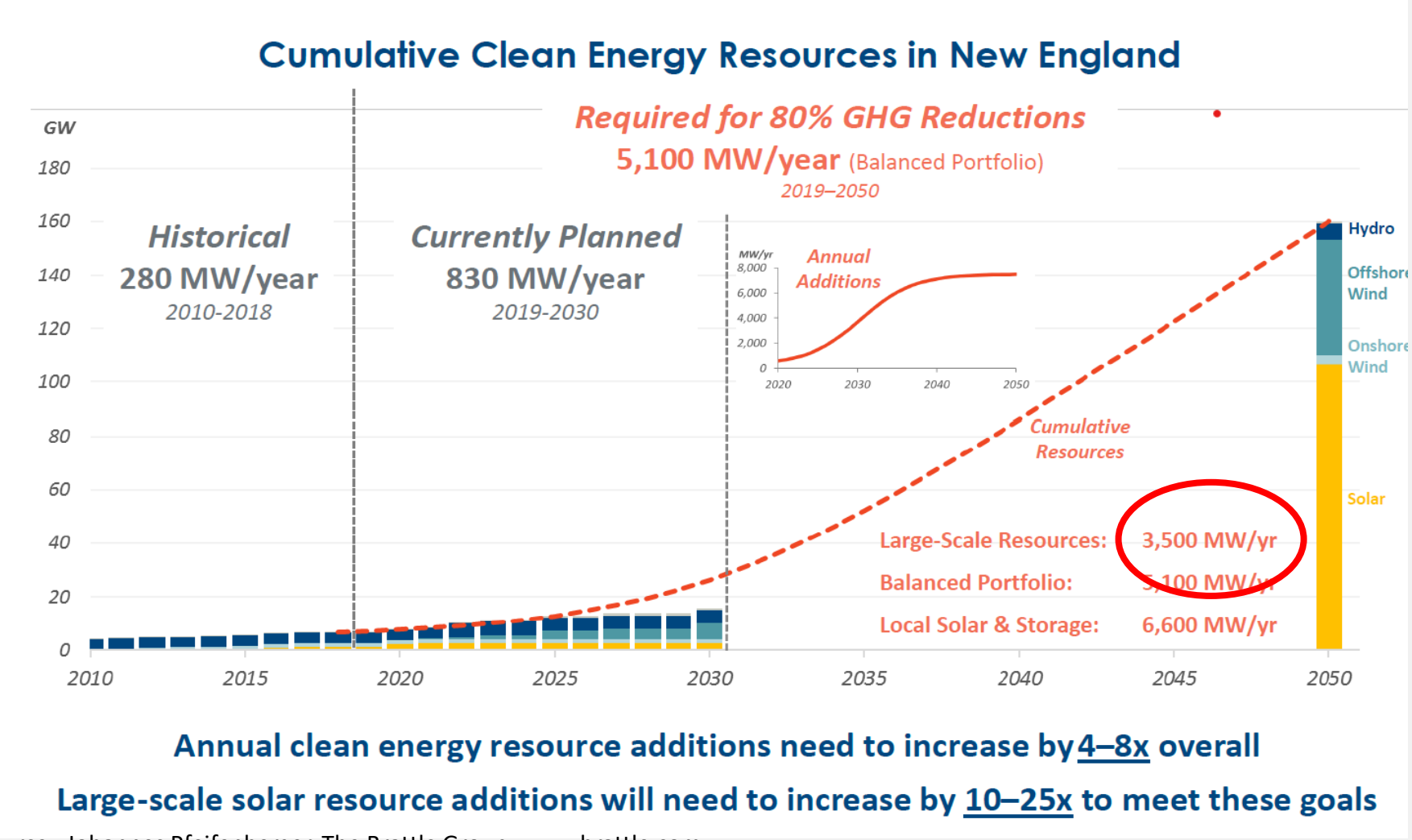
Prof. Peter Fox-Penner
Director, Institute for Sustainable Energy
Grant Jones and Alyssa Gutner-Davis, BU -ISE
Kasparas Spokas and Rohan Janakiraman, the Brattle Group



Climate Policy's Grand Challenges



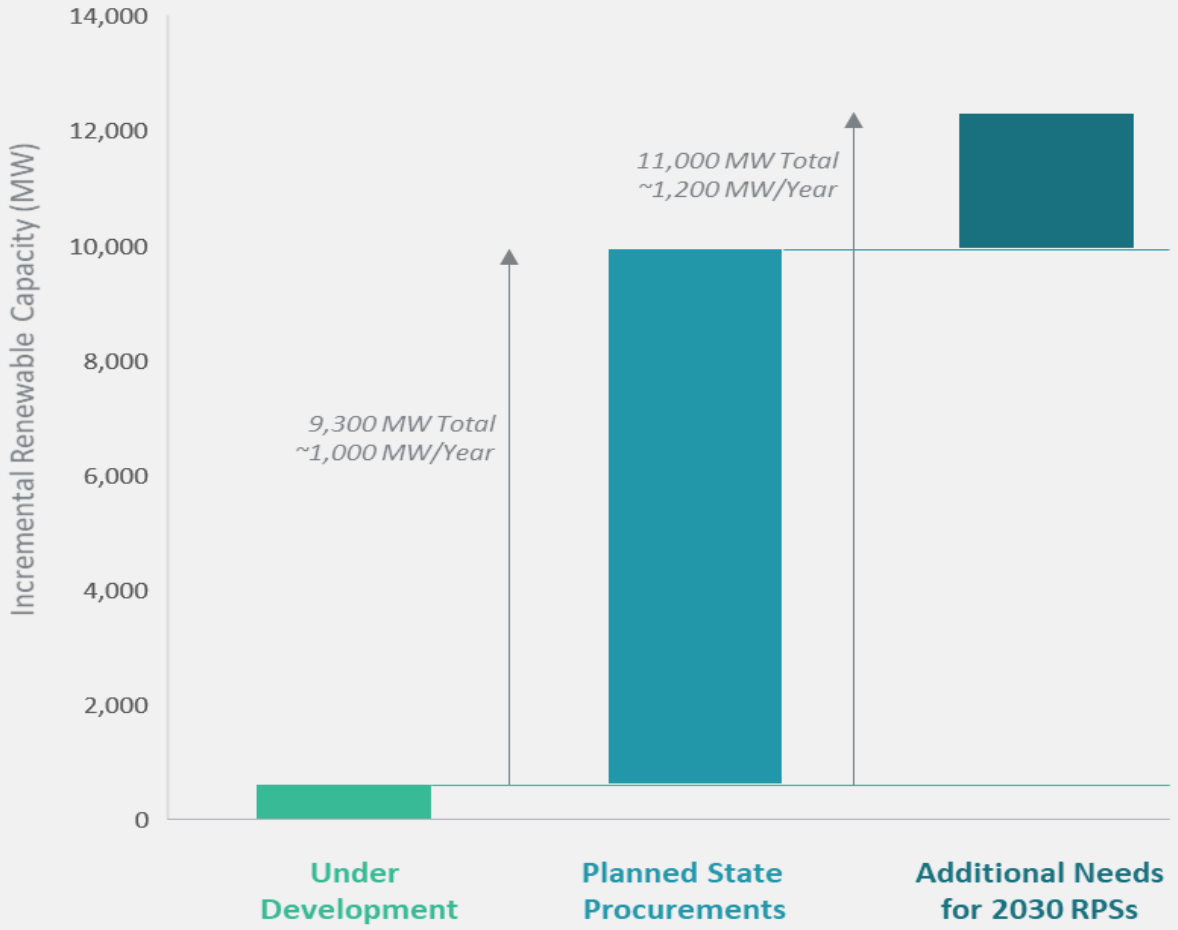
Why Infrastructure Planning + Financing Are Critical



New England is used purely as an example, not because their goals and efforts are weak. They are among the best, yet this example shows that even these efforts need federal help

Source: Johannes Pfeifenberger, The Brattle Group, www.brattle.com

Like the U.S., New England is Not Developing Enough Infrastructure to Meet 2030 goals – Much Less 2050



Actual Rate of Transmission-Connected Renewables: 280MW/yr

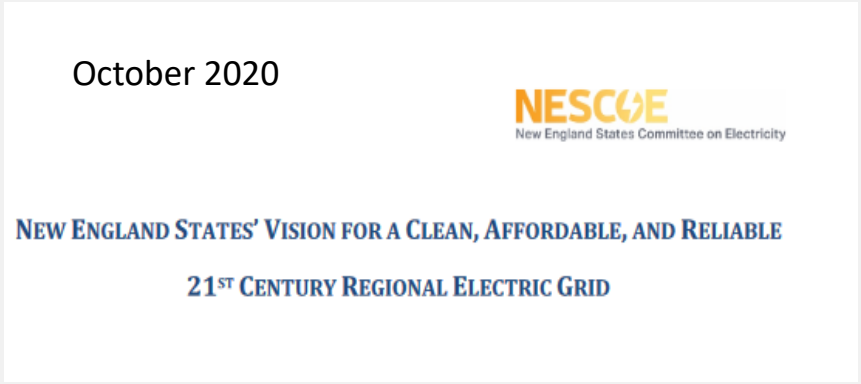
Required Rate of Transmission-Connected Renewables, 2020-30: 1,200 MW/yr

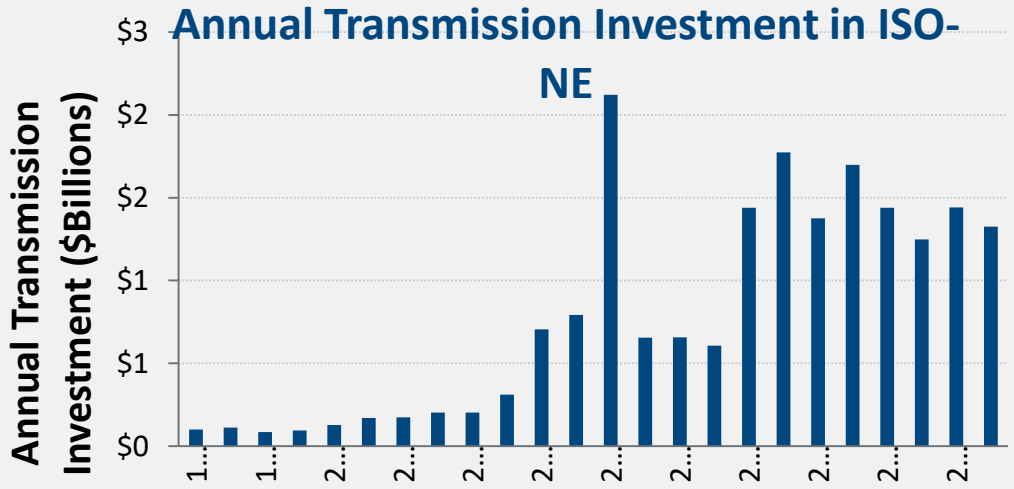
Required Rate, 2020-50: 3,200 MW/yr

Note: Capacity under developed is sourced from Velocity Suite, ABB Inc. under statuses permitted, testing, and under construction. Planned and additional needs are informed by the recent The Road to 100% Renewable Electricity by 2030 in Rhode Island Study, The Brattle Group, 2021.

The Shortfall is Due to Inadequate Infrastructure, Not Lack of Renewable Resources

- There is no shortage of wind and solar capacity in New England or the whole U.S.
- Transmission plans are voluntary and not policy-driven
- Infrastructure siting not tied to plans or procurements
- New England States Committee on Electricity calls for regional planning
- **A federal climate policy should provide help in this area, while giving states and regions the lead role in developing plans with siting OKs that get built**





All Energy Infrastructure Needs Planning and Financing

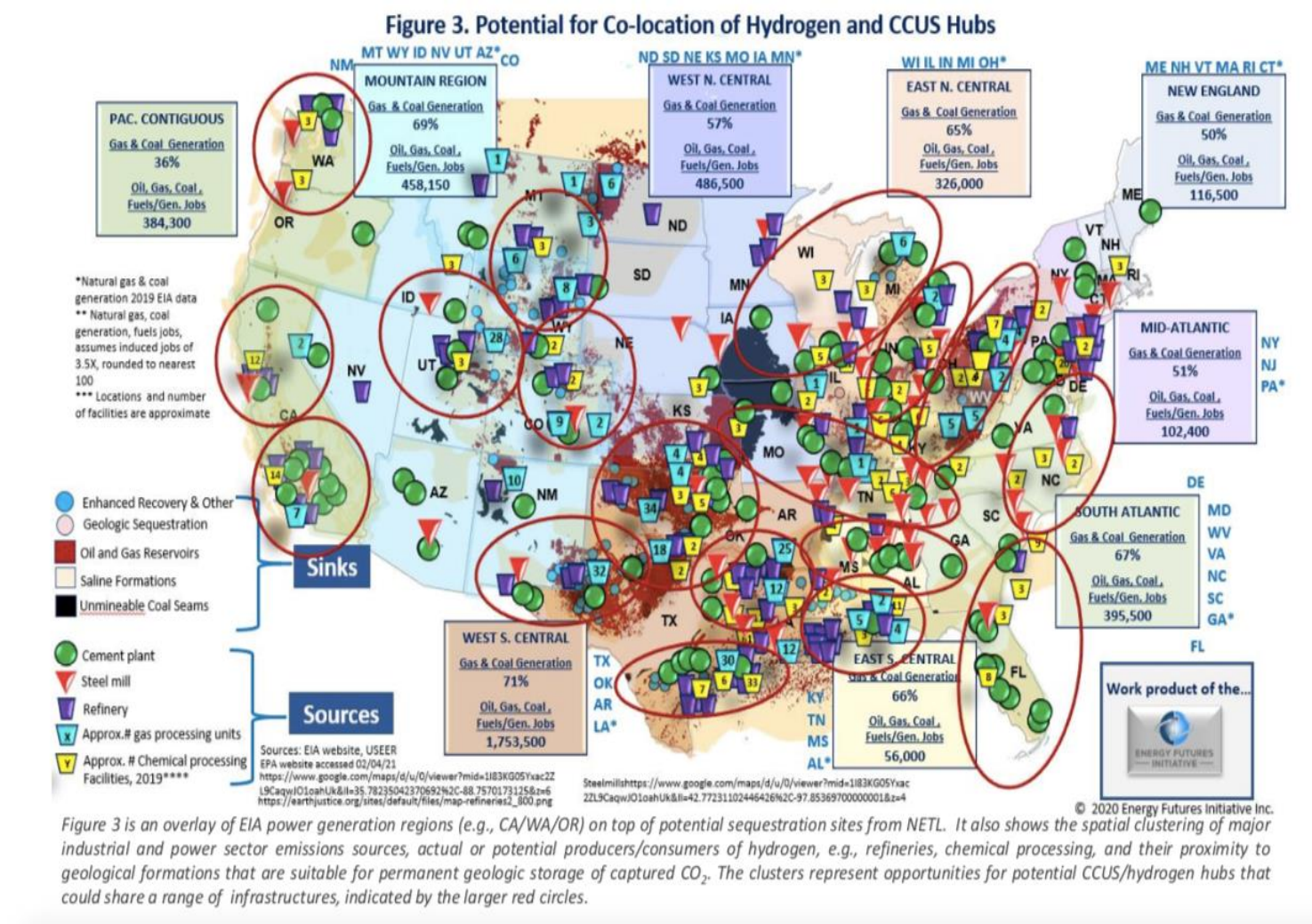


Figure 3 is an overlay of EIA power generation regions (e.g., CA/WA/OR) on top of potential sequestration sites from NETL. It also shows the spatial clustering of major industrial and power sector emissions sources, actual or potential producers/consumers of hydrogen, e.g., refineries, chemical processing, and their proximity to geological formations that are suitable for permanent geologic storage of captured CO_2. The clusters represent opportunities for potential CCUS/hydrogen hubs that could share a range of infrastructures, indicated by the larger red circles.

- The Energy Futures Initiative finds high potential for hubs that combine electricity, hydrogen, CCUS, and decarbonized manufacturing
- The Net Zero America Plan finds a need for 106,000 new kM of CO2 infrastructure
- This won't happen at speed or scale without regional energy planning and federal financing

Source: E.J. Moniz testimony, House Energy and Commerce Committee, 3.22.21

How Climate-Electricity Policies Succeed

1. CES includes all zero-carbon sources, applies to all sales
2. Strengthen infrastructure and downstream sectors
   I. Require planning – encourage it to be regional
   II. Provide financing and technical assistance
   III. Encourage multi-network hubs
   IV. Incentivize streamlined siting
3. Create large, flexible financing authority (e.g. CESA)
4. These policies synch with **end use sector decarbonization**

CONTACT

Peter Fox-Penner

Director, ISE

pfoxp@bu.edu

/peter-fox-penner-130208b8

@PeterFoxPenner

CONFLICT OF INTEREST DISCLOSURE

Dr. Fox-Penner holds equity in Energy Impact Partners, a utility-backed energy investment and innovation firm, EOSE, and consults for Energy Impact Partners and The Brattle Group on energy technologies. Dr. Fox-Penner also conducts research in areas of interest similar to the business interests of Energy Impact Partners and The Brattle Group. The terms of this arrangement have been reviewed by Boston University in accordance with its financial conflicts of interest in research policies.