Future Power Markets Forum

Long-term market impacts of the Inflation Reduction Act and Infrastructure Investment and Jobs Act

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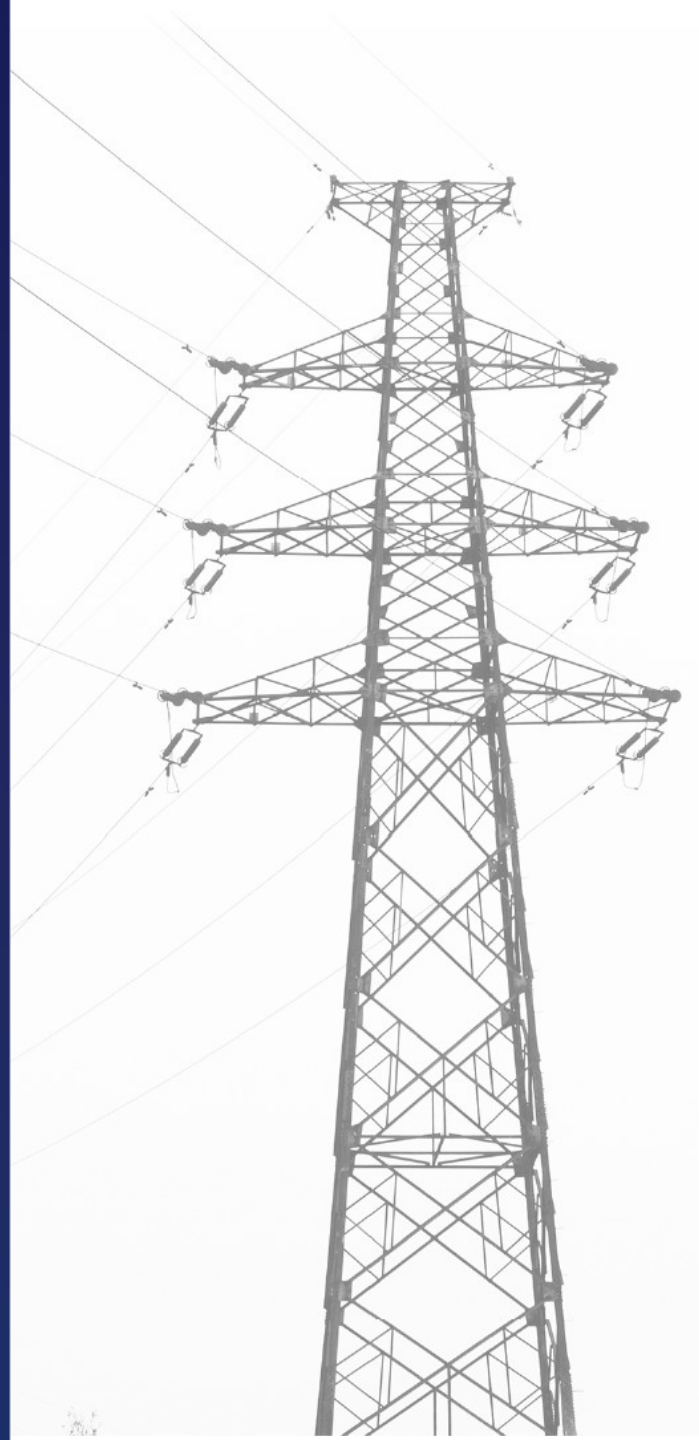

Thank You

Advanced Energy Economy

Alberta Electric System Operator

Amazon Web Services

American Council on Renewable Energy

BP

California ISO

Calpine

Clean Energy Buyers Association

ClearPath

Constellation

Electric Power Supply Association

Electric Power Research Institute

Electricity Consumers Resource Council

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Speakers

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BloombergNEF

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Fifth Third Bank

Arnie Quinn
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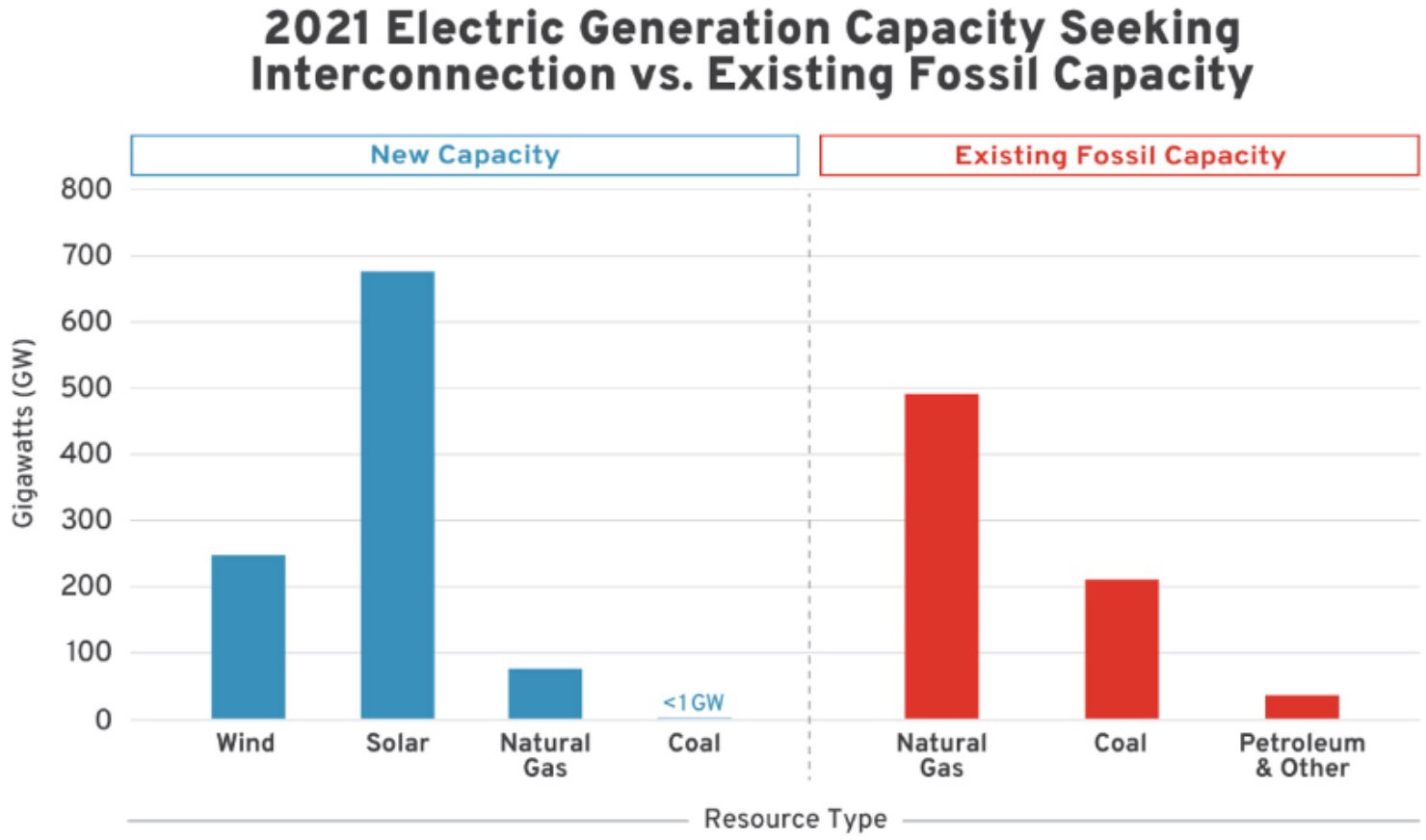
Long-term Market Impacts of the Inflation Reduction Act

Future Power Markets Forum
October 26, 2022

R Street

Pre-IRA Landscape

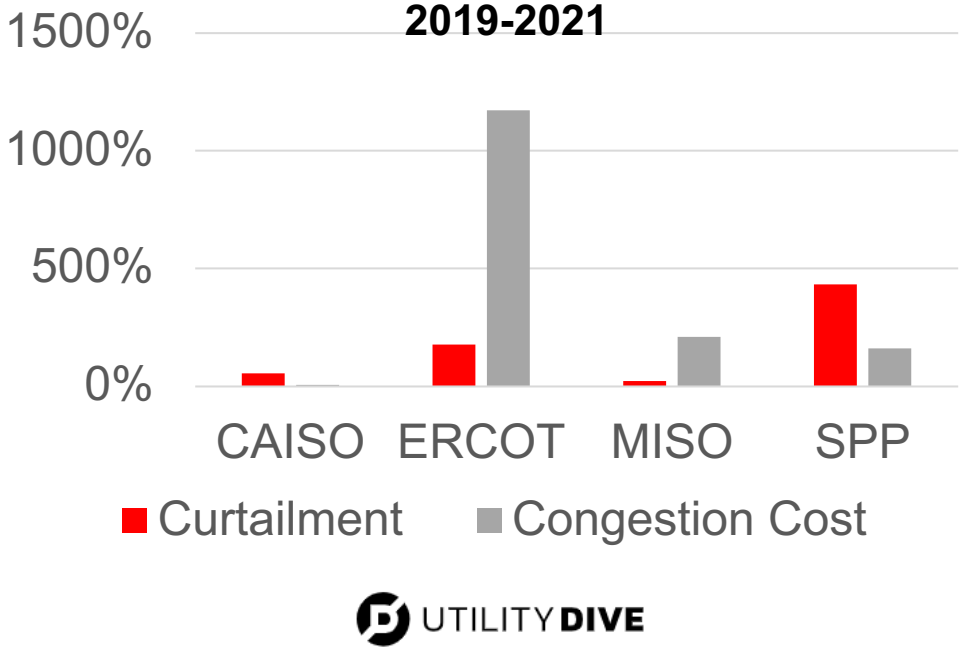
S&P: "energy grid in its current state is nowhere near capable of handling even a fraction of this incoming variable generation"



S&P Source: https://www.capitaliq.spglobal.com/web/client?auth=inherit#news/article?id=72172110&KeyProductLinkType=6

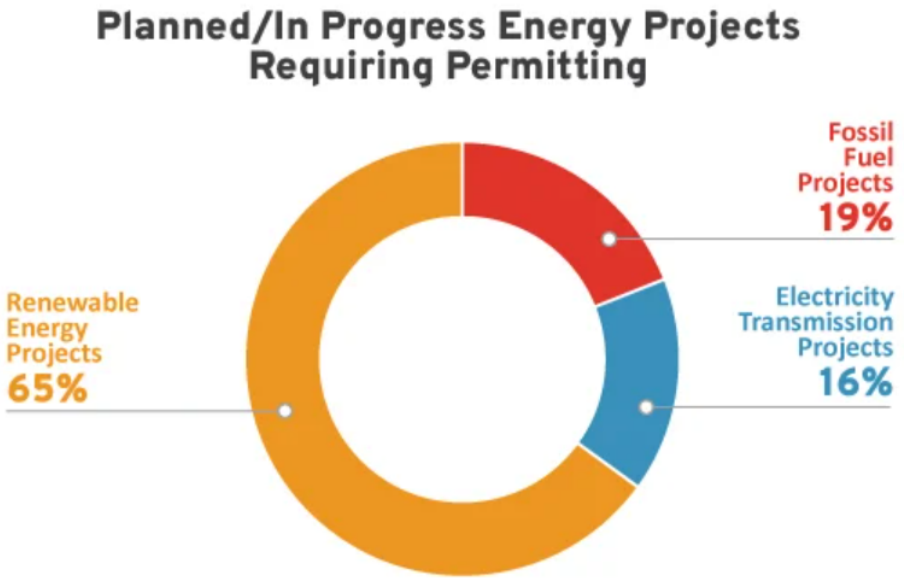
Graph source: new resource data from Lawrence Berkeley Lab and existing resource data from the U.S. Energy Information Administration.

IRA Tailwinds vs. Reg Headwinds

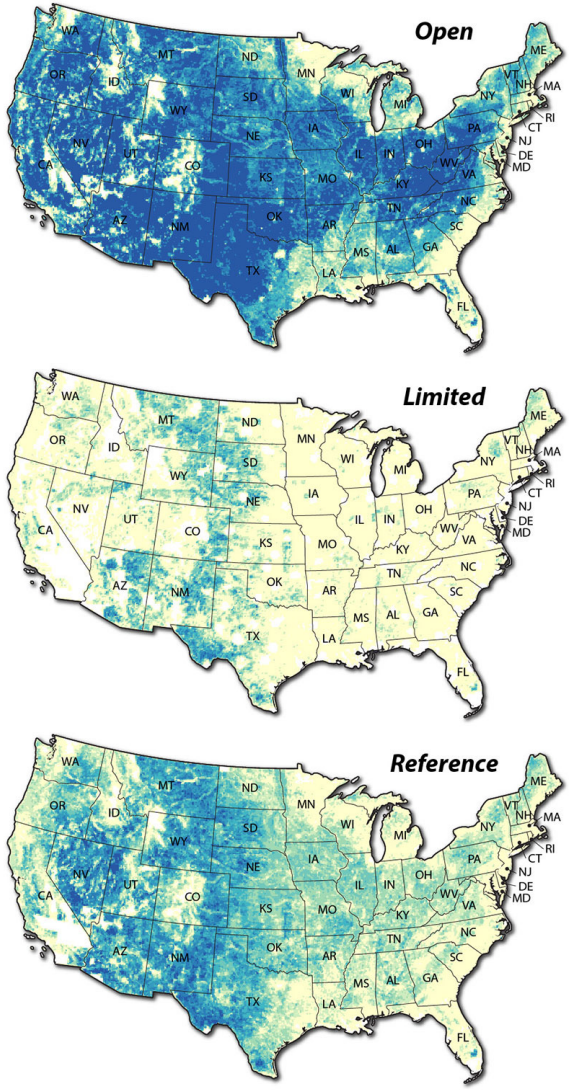


UTILITY DIVE

NERC sees potential summer energy shortfalls, says energy transition 'pace' may threaten reliability



LBL: ave interconnection times 4 years

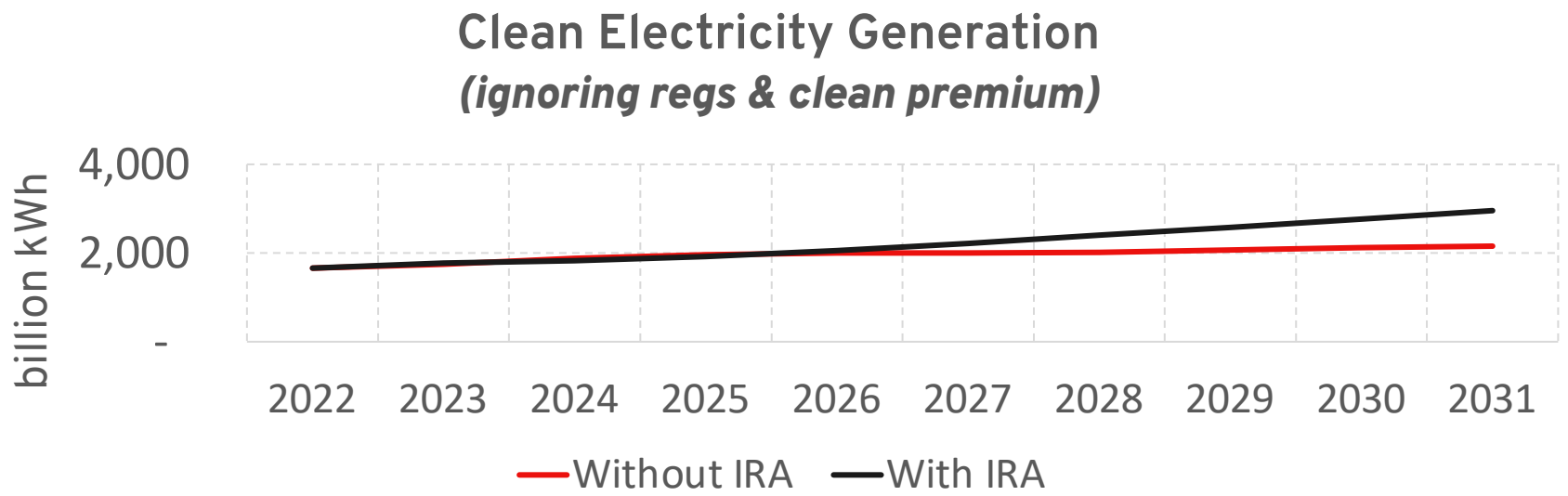


R Street

Permitting source: https://www.rstreet.org/2022/09/20/permitting-reform-is-key-for-renewable-energy-transmission-and-lng-exports/
UtilityDive: https://www.utilitydive.com/news/nerc-sees-potential-summer-energy-shortfalls-says-energy-transition-pace/600878/
Source: Billy Roberts, NREL https://www.nrel.gov/news/program/2021/beyond-technical-potential-nrel-explores-the-challenges-of-siting-wind-in-a-low-carbon-future.html

IRA Impact

- Wind & solar financing (67-90% wealth transfer)
- Additionality: storage, clean firm (shifts tech choice)
- An imperative to model reality



Source: R Street estimates based on CBO cost estimates and EIA AEO 2022.

Modeling reality: https://www.rstreet.org/2022/08/09/think-the-inflation-reduction-act-is-a-climate-savior-think-again/

Legislative & Regulatory Implications

- IRA effects highly dependent on reg conditions
- IRA maximization
  - Install GETs + ITM
  - Gen interconnection reforms
  - Permitting reforms
  - Refine capacity accreditation & RMR criteria
- Post-IRA impact
  - Regional Tx final rule & interregional reforms
  - Sustainable market design
  - Clean firm R&D and reg barrier reform

Thank you!

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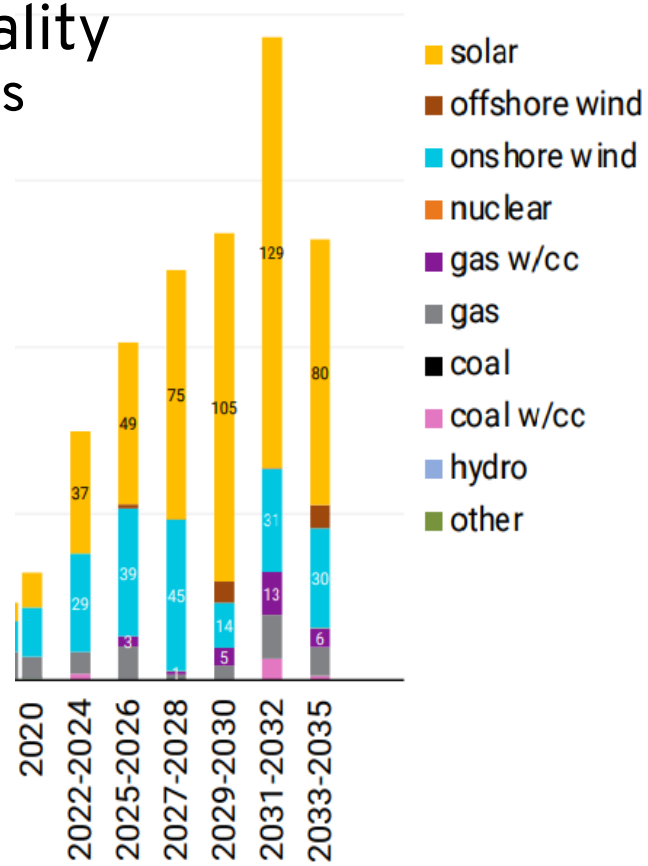
Appendix

Inaccuracies in IRA Assessments

- Prominent modeling grossly exaggerates IRA additionality
  - Practitioners: binding constraints tied to regulatory conditions
- Informative studies must model reality:
  - Private clean premium (alters baseline)
  - Actual and planned generation and transmission expansion
  - Transmission congestion & generator curtailment patterns
  - Generator interconnection conditions
  - Anticipated permitting and siting timelines & costs
  - Market rules and reliability standards evolution
  - Granularity of effects: regional, except state level for siting



R Street

See more: https://www.rstreet.org/2022/08/09/think-the-inflation-reduction-act-is-a-climate-savior-think-again/

Source: https://repeatproject.org/docs/REPEAT_IRA_Prelminary_Report_2022-08-04.pdf

IRA Deployment Effects

- Primary: shifts financing for destined projects
  - Most beneficiaries are projects already planned
  - Vertically integrated utilities benefit most (infrastructure act funds and tax credits advantages)
- Secondary: marginal additional mature tech projects
  - Tips some storage > gas peakers
- Tertiary: additional uneconomic (nascent tech) projects
  - E.g., de-risks demonstrations
- Key deployment variable: regulatory environment
  - w/ or w/o IRA

Ignoring reg constraints, 67% of clean energy backed by IRA would have occurred anyhow. Actual number likely 80-90%.

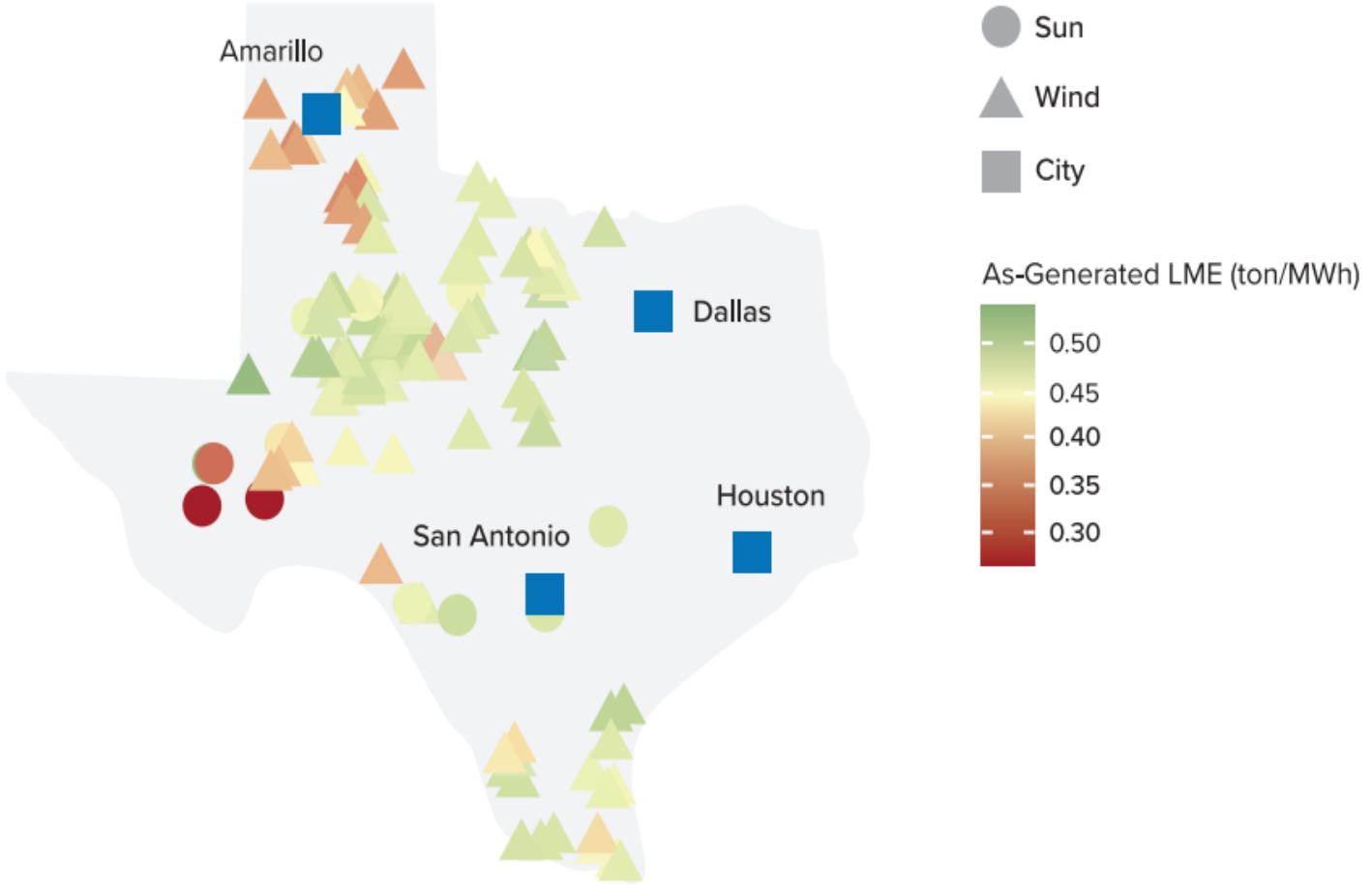
BoA:
1) Renewables accelerate in least efficient areas
2) More price volatility & load balancing challenges

R Street

BoA source: https://www.utilitydive.com/news/inflation-reduction-act-clean-energy-boa-bank-of-america/631608/

Differentiating Clean Electrons

- Location affects emissions 2x+
- Carbon-free energy commits meet laws of physics
  - Primary: corporate trend
  - Secondary: federal procurement
- “E”SG leaders reconciling clean energy & emissions pledges
  - Commercial ecosystem lacking
  - Energy & financial reg reform
  - Watch “beyond RECs” market



R Street

Brattle study: https://www.brattle.com/wp-content/uploads/2021/08/Locational-Marginal-Emissions-A-Force-Multiplier-for-the-Carbon-Impact-of-Clean-Energy-Programs.pdf
For more see: https://www.utilitydive.com/news/liberty-never-looked-so-green-policy-implications-of-private-carbon-free-e/629625/

Strategic Response

Condition	Strategy
Regulatory barriers understated	Quality info = robustly model reg constraints Premium for easily sited projects Congestion/curtailment/basis risk management: → hedge value for independent producers (supplier absorbed risk) → risk socialized for vertically integrated utilities
High regulatory uncertainty	Probability-weighted reg scenario analysis High option value over 2-3 year horizon (regulatory clarity period)
Corporate sustainability	Premium emerging for emissions displacement Credibility/verifiability in commercial products key enabler to watch Amplifies premium for easily sited projects

Connect

Submit comments for the Future Power Markets Forum website

Website powermarkets.org

Contact team@powermarkets.org