

Committees on Consumers and the Public Interest, Electricity, Energy Resources and the Environment, and Gas

A New Approach to Energy Affordability



Hon. Neil Chatterjee Chairman Federal Energy Regulatory Commission



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NARUC Winter Policy Summit February 11, 2020 Judith Schwartz, To the Point



California's Fuel Supply Mix 2020



Imports: Natural Gas and Coal



Natural Gas



Large Hydro



Nuclear



Biogas and fuel cells



Biomass



Small hydro



Wind and Solar



Geothermal





Generator Microgrid/solar/fuel cells

Rooftop solar



Solar Canopies



Community Solar/microgrid

5

100% Carbon Neutral (\$\$\$ RECs & Offsets)



Imports: Natural Gas and Coal



Natural Gas



Large Hydro



Nuclear



Biogas and fuel cells



Biomass



Small hydro



Wind and Solar



Geothermal





Generator Microgrid/solar/fuel cells

Rooftop solar



Solar Canopies



6

Community Solar/microgrid

100% Renewables (California RPS)



Imports: Natural Gas and Coal



Natural Gas



Large Hydro



Nuclear



Biogas and fuel cells



Biomass



Small hydro



Wind and Solar



Geothermal





Generator Microgrid

Microgrid/solar/fuel cello





Rooftop solar



Solar Canopies



Community Solar/microgrid

7

100% Zero Carbon



Imports: Natural Gas and Coal



Biomass

Natural Gas



Large Hydro



Nuclear





Hydrogen (green gas)



Small hydro



Wind and Solar



Geothermal





Generator Microgrid/solar/fuel cells





Solar Canopies



Community Solar/microgrid

Rooftop solar



- Energy efficient residence
- Access to solar (rooftop or community solar subscription)
- Net metering payments offset total bill (including night usage)
- Walk or cycle to work, school, leisure activities
- Net zero lifestyle, access to EVs, public transportation are options
- Organic food available from garden, farmers market, local suppliers
- Native, drought-tolerant plants in garden

Green Privilege





What about our social compact for universal service?

- Substandard housing increases energy burden. Roofs may not support solar
- Many consumers do not have cash flow for community solar subscriptions
- Long commutes in older vehicles and less efficient public transportation
- Subsistence lifestyle in food deserts
- Mobile homes not eligible for weatherization subsidies
- Landlords may not invest in EE measures, electrification, charging stations
- Cross subsidies for solar NEM, last to be reliant on natural gas

Affordability & Reliability Need Varied Resources



Duck Curve: Over-Generation + Evening Ramp

Overnight Supply in California



CAISO November 22, 2019 9:35 PM

Morning Resources in California



CAISO November 28, 2019 7:06 AM

Morning Resources in New England



ISO New England, Jan. 4, 2020, 6:50 AM

2020: We are at an inflection point **Energy Transitions** LOW/ZERO CARBON SOLAR/WIND CARBON INTENSIVE FOSSIL FUELS

https://www.anewrealitybook.com/

Four steps towards a clean, equitable transition

1. Adopt Hourly Carbon Accounting (Match Load+Supply)





http://www.eia.gov/electricity/data/eia860m/



Source: Pintail Power

2. Hybridize Long-Duration Thermal Generation and Storage

- Enhance existing gas power and peaker plants with flexible, dispatchable storage
- Potential to reduce carbon impact immediately by 50%
- Increase utilization of renewables while avoiding curtailment
- Provider dispatchable buffer so privately-owned DERs contribute to common supply



3. Decarbonize the gas supply

Gas network map of Palo Alto

- Reduce carbon content further with lower carbon fuels
- Hydrogen and renewable bio fuels are being commercialized
- Excess solar being studied to produce hydrogen more cost-effectively
- Easier than replacing existing infrastructure

4. Socialize Cost of 24x7 Community Reliability





LET'S TALK RATIONALLY ABOUT A GREENER ENERGY FUTURE

Delivering on aspirational decarbonization goals

By Judith Schwartz, To the Point



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There is no question that we are at an inflection point for a clean-energy transition. The public's enthusasm has been captured. We've seen the emergence of passionate young activitis and aggressive carbon reduction goals and mandates adopted by governments, legislatures, commissions, maningalities and corporations. How

can utilities deliver on a low-carbon vision at a sustainable cost, while maintaining reliability in the face of extreme weather conditions?

Reservations expressed by incumbents reliant on fossil fuels to maintain reliability are often mainterpreted. There are fundamental differences between deniers of climate change and "dean pragmatists" who argue for recommic, operational and environmental sustainability. A fact-based, holistic approach that considers systemwide interdependencies is critical to implementing meaningful decarborization atrategies. This article examines those challenges and identifies four pathways towards a smoother, more equitable transition.

The role of aspirational targets

Aspirational goals are great motivators that can animate markets and investors. However, it is problematic to set long-term targets without also considering current capabilities and the laws of physics. Rhetoric is not an engineering discipline and memorable slogans with good intentions can lead to bad policy if they are untethered to reality.

There is a tendency to interchangeably use terms such as 100% carbon neutral, 100% renewables and zero carbon, even though the operational differences, economic impact and actual carbon reduction vary considerably. The failure to adequately educate stateholders and consumers about these differences increases the risk of catastrophic shortfalls of power and unintended higher carbon levels.

Let's define the terms:

100% carbon neutral means an entity purchases enough carbon-free resources to cover aggregated demand generally calculated on an annual basis. Solar and wind resources are intermittently available at certain times of day and vary

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Link to article: <u>http://digital.apogee-mg.com/publication/?i=623101&ver=html5&p=24</u>



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February 2020



Elizabeth B. Stein Senior Manager and Senior Attorney Energy



New York Climate Leadership and Community Protection Act (CLCPA)

- Caps statewide greenhouse gas emissions in 2050 at 15% of 1990 total
 - 1990 total was 236.19 MMTons CO2e
 - Therefore, 2050 GHG budget = 35.42 MMTons CO2e
 - 2016 total was 205.61 MMTons CO2e
- Other goals....
 - 6 GW distributed solar by 2025
 - 185 T Btu energy reductions compared with 2025 forecast via energy efficiency
 - 3 GW energy storage capacity by 2030
 - 9 GW offshore wind by 2035



- Electric Rates Modernization, Affordability, and Greenhouse Gas Reductions
- Natural Gas Stranded Cost Risk Planning for Future Affordability

Electric Rates

Cić

Flat electric pricing does not improve affordability for most low income customers.



Time-Variant Pricing ("TVP")

- Time of Use ("TOU")
- Three-part rates/demand charges
- Critical Peak Pricing
- Real-Time Pricing (for Supply)

Real-Time Pricing

9/18/2018 - Real-Time LBMP & Actual Load Click and drag in the plot area to zoom in 250 11k



Select Zone(s): Zone A - West Zone B - Genesee Zone C - Central Zone D - North Zone E - Mohawk Valley Zone F - Capital Zone G - Hudson Valley Zone H - Millwood Zone I - Dunwoodie Zone J - New York City Zone K - Long Island Select Data Type(s): Display LBMPs Display Loads Select Date Preferences: View Yesterday's Data Notes: -Actual Load includes losses

Source: New York Independent System Operator (NYISO)

EDF/Citizens Utility Board (CUB) Study

- Tested whether flat pricing is protective
 - Most customers studied would have done better on dynamic pricing, even without changing behavior.
 - Low-income customers generally did as well or better.
- Resulting recommendations
 - Allow access to anonymous energy-usage data
 - Adopt opt-in real-time pricing
 - Investigate a transition to opt-out real-time pricing
 - Investigate various dynamic pricing structures
 - Focus on helping customers lower their "coincident peak"

TVP + carbon pricing?

- A robust cost of carbon that generators had to pay would be expected to lower emissions of generation.
- Coupled with a real-time pricing tariff, this can be a pathway for sending a meaningful environmental price signal to retail customers.



New York GHG Sources

Figure S-4. 2016 CO₂ Emissions from Fuel Combustion by Fuel Type

CO₂e = carbon dioxide equivalent GHG = greenhouse gas



Source: New York GHG Inventory (July 2019)

Overview of Stranded Value



Time

PHYSICAL SOLUTIONS TO REDUCE INVESTMENT ARE NEEDED

Source: E3

- 1. Consider requiring all new residential and commercial construction to be all-electric.
- 2. Clarify that a gas utility's **"obligation** to serve" could be met with alternative fuels, such as targeted electrification.



Recommendations

- 1. Initiate interagency, **integrated long-term planning** for gas demand, infrastructure, and the transition of the delivery system.
- 2. Consider requiring all new residential and commercial construction to be allelectric.
- 3. Identify alternatives to significant new investments in the gas delivery system.
- 4. Anticipate and organize a just transition for the gas delivery system workforce.
- 5. Ensure that low-income and disadvantaged communities benefit from and are not burdened by the gas transition.
- Clarify that a gas utility's "obligation to serve" could be met with alternative fuels.
- 7. Consider **aligning financial recovery** of new gas infrastructure investments with the time horizons determined in the integrated long-term gas infrastructure plan.
- 8. Consider **ratemaking adjustments** to cushion the impact of the transition on customers.
- 9. Explore **external funding** sources to recover gas transition costs from sources beyond gas utility customers.

Thank you!

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Ted Trabue, Director

Making an Impact





- Nonprofit founded in 1986
- 300+ Employees
- Locations: VT, DC, OH
- Design, deliver, and evaluate programs nationwide:
 - Energy efficiency
 - Transportation
 - Renewable energy

Energy Justice



Our Customers:

- Utilities
- Businesses
- Government
- Foundations
- Environmental & Consumer Groups

What is the Sustainable Energy Utility?

- Clean & Affordable Energy Act (2008)
- Ratepayer-funded, privately operated
- Performance-based contract to DOEE
- Designed to help District households, businesses, and institutions save energy and money through energy efficiency and renewable energy programs.

DCSEU Goals

Electricity Savings



Green Jobs



Local Economic Development

Gas

Savings



Low-Income Spending & Savings



Renewables





Investing in Low-Income Communities

- 20% of DCSEU spending
- 10% of overall energy savings
- Incentives and Technical Assistance in Affordable Multifamily Housing, Clinics, Shelters
- Energy Conservation Kits through LIHEAP Program





Solar for All

- Single-Family Solar at No Cost
- Community Renewable Energy Facilities

DCSEU Making an Impact | February 11, 2020



Workforce Development

- The DCSEU helped me get over the fear of getting back out into the workforce, by giving me the opportunity to learn some new skills and develop a certain confidence that I can go out there and compete in today's job market.
 - Andre Roberson
 DCSEU Workforce Development Extern

Impact Since 2011







\$39+ Million **Invested in Energy**

Renewable Energy in

Efficiency and

Low-Income

Communities

\$1 Billion

In lifetime energy cost savings for DC residents and businesses

6.2 Million

Tons of GHG emissions

prevented

600+ Green Jobs

Created for District Residents 600 Solar Systems For Low-Income Residents



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