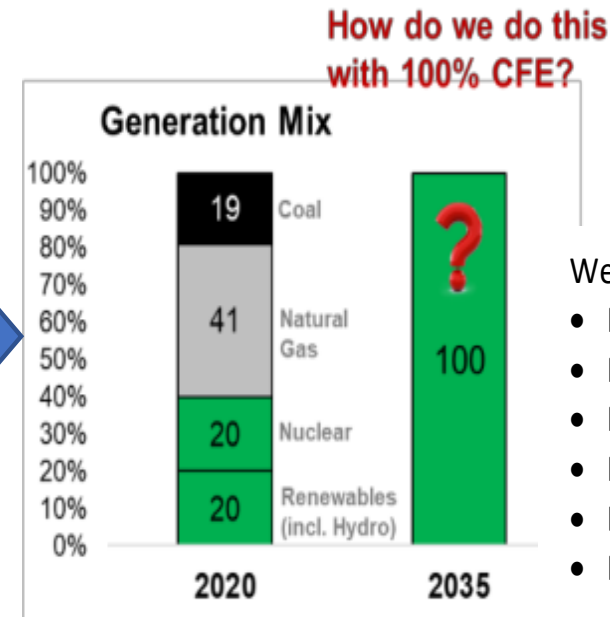
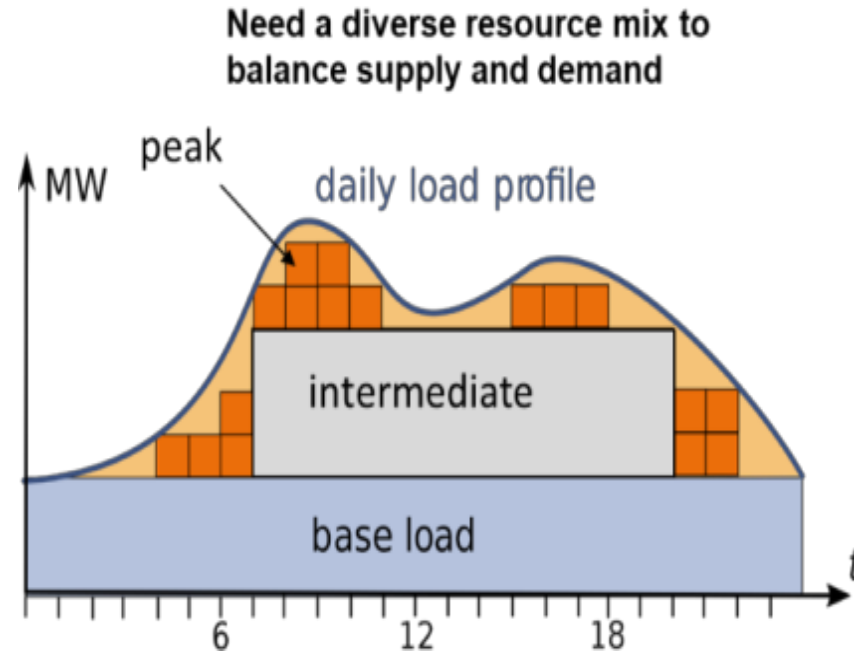


# Intro: How to Decarbonize the Grid?

## Transitioning from Fossil Generation Balancing to 100% Carbon-free Electric Grids



We need:

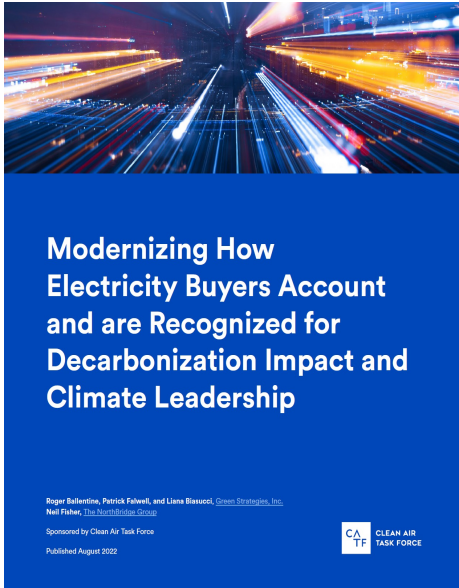
- More solar
- More wind
- More transmission
- New firm, flexible carbon free
- Long-term storage
- Flexible demand, etc.

With electrification, challenge even greater:

- More than 2x electric generation
- 3x electric capacity
- Major grid transformation

# Intro: NextGen CFE Procurement Initiative

Effort to unleash the power of electricity buyers to help decarbonize the grid by measuring, reporting and recognizing actions that have *actual* climate mitigation value.



<https://www.catf.us/resource/modernizing-how-electricity-buyers-account-recognized-decarbonization-impact-climate-leadership/>

### Better Reflect Emissions from Electricity Use (*Attributional*)

(tied to timing and location of buyer consumption)

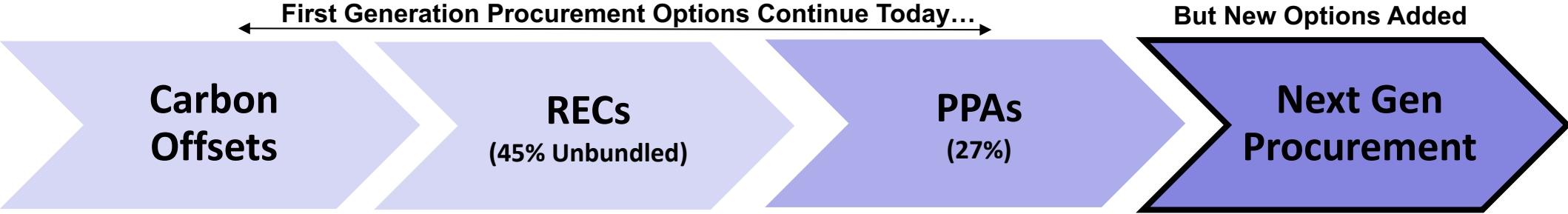
### Identify Incremental CFE & Other Actions

### Measure Carbon Impact of Buyer Actions (*Consequential*)

(not necessarily tied to timing and location of buyer consumption)

<b>Carbon Facts 1.0 (Illustrative)</b>	
Reported for Prior Calendar Year	
<b>Annual Consumption (By Regional Grid / Balancing Authority)</b>	MWh
Time Interval Used for Scope 2 Reporting	[Annual/Hourly]
<b>Scope 2 Emissions</b>	
Location-Based	_ tCO <sub>2</sub>
“Modified” Market-Based (tied to same regional grid)	_ tCO <sub>2</sub>
<b>Optional: CFE Score % (Hourly Average)</b>	_%
<b>Annual CFE Purchases (Not by Regional Grid / Balancing Authority)</b>	
Total Annual CFE %	_% of consumption
<b>Decarbonization Impact and Avoided Emissions (Track carbon reduction goals)</b>	
Incremental Total CFE (by resource type)	_ MW / _ MWh
Describe Other Buyer Actions	
<b>Avoided Emissions</b>	
Carbon Baseline [CB]	_ tCO <sub>2</sub>
Avoided Emissions [AE]	_ tCO <sub>2</sub>
	_ tCO <sub>2</sub> /MWh
Net Emissions [CB]-[AE]	_ tCO <sub>2</sub>
<b>Avoided Emissions Impact [(CB-AE)/CB-1]</b>	_%

# Procurement: Voluntary Markets Becoming More Diverse, Complex & Ambitious



**Starting in 1989,** companies began to procure carbon offsets to offset their CO<sub>2</sub> footprint elsewhere

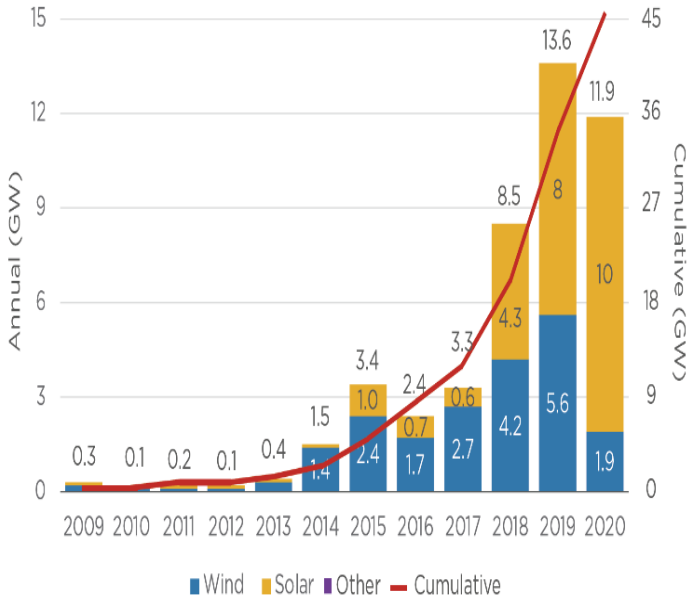
**Starting in late 1990s,** unbundled RECs allowed companies to claim electricity use was renewable

**Around mid-2010s,** long-term PPAs (virtual and physical) with additionality

**Recently, two trends:**

- **Emissionality**
- **24/7**

**RE100 initiative launched in 2014; now over 380 companies have enrolled**



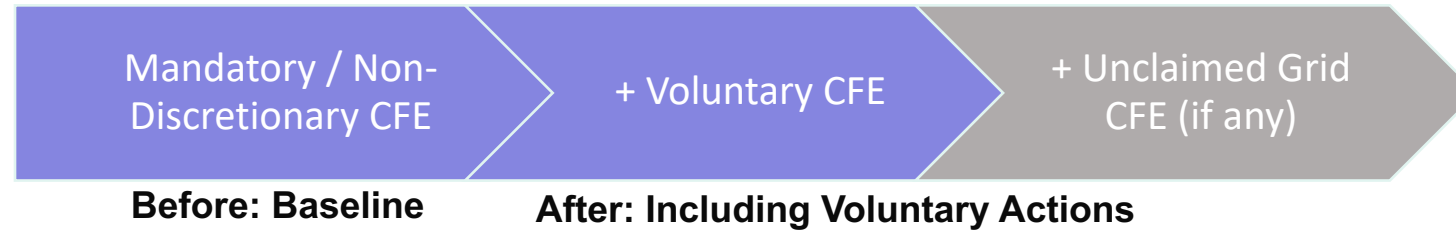
# Procurement: Lessons Learned

1. Successful in stimulating wind and solar development and helping to lower costs
2. Achieving RE 100 is not sufficient, even if within same grid (modeling and market evidence)
3. A diverse portfolio of clean energy technologies, including firm dispatchable clean energy, is needed to provide a less risky and cost-effective pathway to deep decarbonization<sup>1</sup>
4. Not all CFE, even if additional, has same environmental benefit
5. Improvements in accounting and recognition programs are needed to better reflect and recognize best practices
6. There are important actions that can be taken now to provide leadership

<sup>1</sup> [https://www.catf.us/wp-content/uploads/2021/06/NorthBridge\\_Deep\\_Decarbonization\\_Literature\\_Review.pdf](https://www.catf.us/wp-content/uploads/2021/06/NorthBridge_Deep_Decarbonization_Literature_Review.pdf).

# Procurement: Measuring What Matters

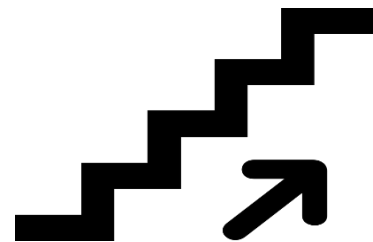
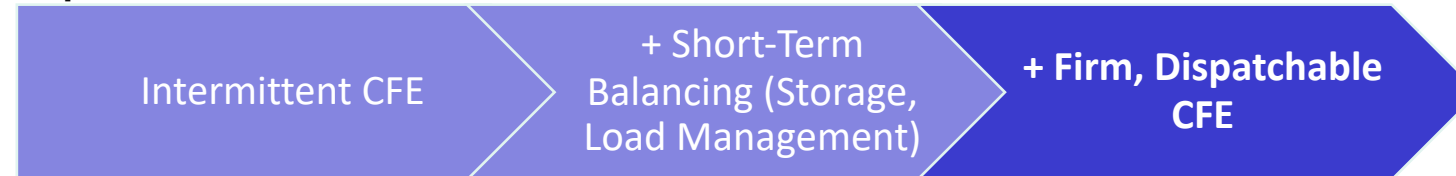
**Attributional:** Electricity Use – CFE Score %? / Non-CFE CO<sub>2</sub> Emissions Inventory?



**Consequential:** CO<sub>2</sub> Impact Score?



**Incremental:** Resource Development?



**Interim steps are possible!**

- Assess current procurement (on above metrics)
- Set near and long-term goals (using more granular time & location data)
- Pilot transactions and socialize insights

## Data: Holiday “Wish List”

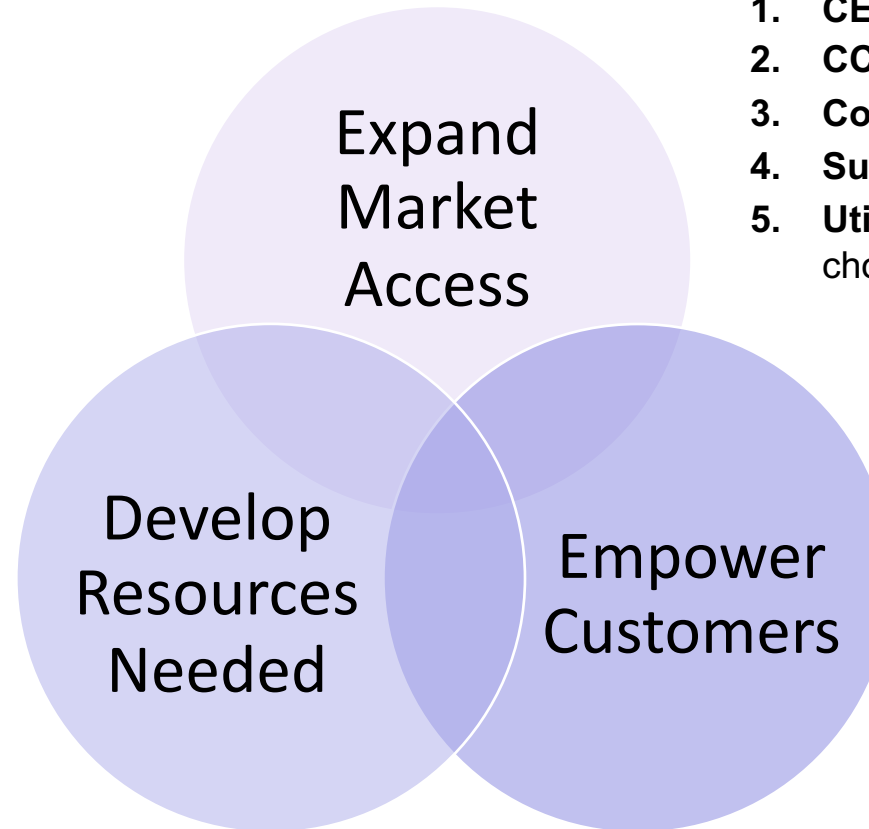
Data	Source(s)
<b>Consumption (standardized format)</b> <ul style="list-style-type: none"> <li>• Actual hourly</li> <li>• Load profile</li> </ul>	<b>Local Utility</b>
<b>Production (GIS)</b> <ul style="list-style-type: none"> <li>• CFE</li> <li>• Non-CFE</li> </ul> <b>CO<sub>2</sub> Emissions Factors</b> <ul style="list-style-type: none"> <li>• Average hourly</li> <li>• Marginal</li> </ul>	<b>ISO / EIA</b>
<b>Utility Baseline by Service Area (standard tariff or default service)</b> <ul style="list-style-type: none"> <li>• CFE Score %</li> <li>• Non-CFE Emissions Factor</li> </ul>	<b>Local Utility / EIA / EEI</b>
<b>LSE Supply Disclosures (CFE Score, Emissions, Impact)</b>	<b>LSE</b>
<b>Grid “Residual Mix” Emissions Factor<sup>1</sup></b> <ul style="list-style-type: none"> <li>• Annual</li> <li>• Hourly</li> </ul>	<b>ISO (generation); Issuing Body / Registry / LSE (EACs)</b>
<b>Energy Attribute Certificates (EACs)</b> <ul style="list-style-type: none"> <li>• Annual CFE (not just RE)</li> <li>• Hourly (T-EACs)</li> </ul>	<b>Issuing Body / Registry</b>

<sup>1</sup> Refers to the untracked or unclaimed energy and associated emissions.

# Policy Implications



1. **Include all forms of CFE & balancing resources**
2. **More granular data access in standardized formats while protecting privacy**
3. **Ensure fair allocation of system costs** (e.g., bypass of fixed costs with volumetric charges)



1. **CES for all LSEs**
2. **CCA / default service**
3. **Community solar**
4. **Supplier choice** (green products)
5. **Utility green tariffs** (without supplier choice)

1. **Align mandatory and voluntary programs**
2. **Load data and T-EACs**
3. **Expand supplier disclosures**
4. **Support modernization of GHG accounting, reporting and recognition programs**

**Focus on near- and long-term goals that drive grid decarbonization (CFE score, carbon impact, resource development)**