



May 2, 2024

# Designing a 24/7 Carbon-Free Electricity Transition Tariff

## Webinar

Carl Linvill  
clinvill@raponline.org  
Principal

Shawn Enterline  
senterline@raponline.org  
Senior Associate

Dave Farnsworth  
dfarnsworth@raponline.org  
Principal

Nancy L. Seidman  
nseidman@raponline.org  
Senior Advisor

# The United Nations' 24/7 Global Compact Has Attracted 148 Entities ...



[Home](#)

[About](#) ▾

[Benefits](#)

[How to join](#)

[Green Hydrogen](#) ▾

[News and events](#)

[Resources](#)

[FAQs](#)

[Subscribe to our newsletter](#) >

## Join the Movement for a 24/7 Carbon-Free Energy Future

The science is clear: the urgency of the climate crisis demands bolder, faster and more tangible action. To combat this, we must ensure electricity demand across all sectors and industries is met with carbon-free energy sources, every hour, every day, everywhere.



See: <https://gocarbonfree247.com/>

# ... Including the US Federal Government, Which Joined in December of 2023

## United States Government Joins UN 24/7 Carbon-Free Energy Compact

**Dubai, UAE | 5 Dec 2023:** At the United Nations Climate Change Conference of the Parties (COP28), the White House Council on Environmental Quality (CEQ) announced that the United States Government has joined the United Nations (UN) 24/7 Carbon-Free Energy (CFE) Compact. The 24/7 CFE Compact, which UN-Energy and Sustainable Energy for All launched in 2021, is a voluntary commitment with over 140 participants that aims to match every hour of electricity consumption, on every energy grid globally, with carbon-free sources of electricity production.

[Read more about the announcement](#)



# How Does 24/7 Differ From Annual Matching Tariffs?



**Annual matching**  
Existing annual matching green tariffs leave many hours served by fossil-fueled resources...



**Annual investments**  
...without any incentive to procure resources that address the fossil-fueled hours.



**Hourly matching**  
24/7 transition tariffs incentivize ...



**Hourly investments**  
...that address high-emitting places and hours and the need for carbon-free firming resources.

# Why Are Customers and Utilities Interested in 24/7?

## Customers

- Provides hourly decarbonization assurance
- Engages local resources (e.g., aggregated DERs)
- Builds local jobs
- Accelerates new technology
- Supports local resilience
- Demonstrates leadership

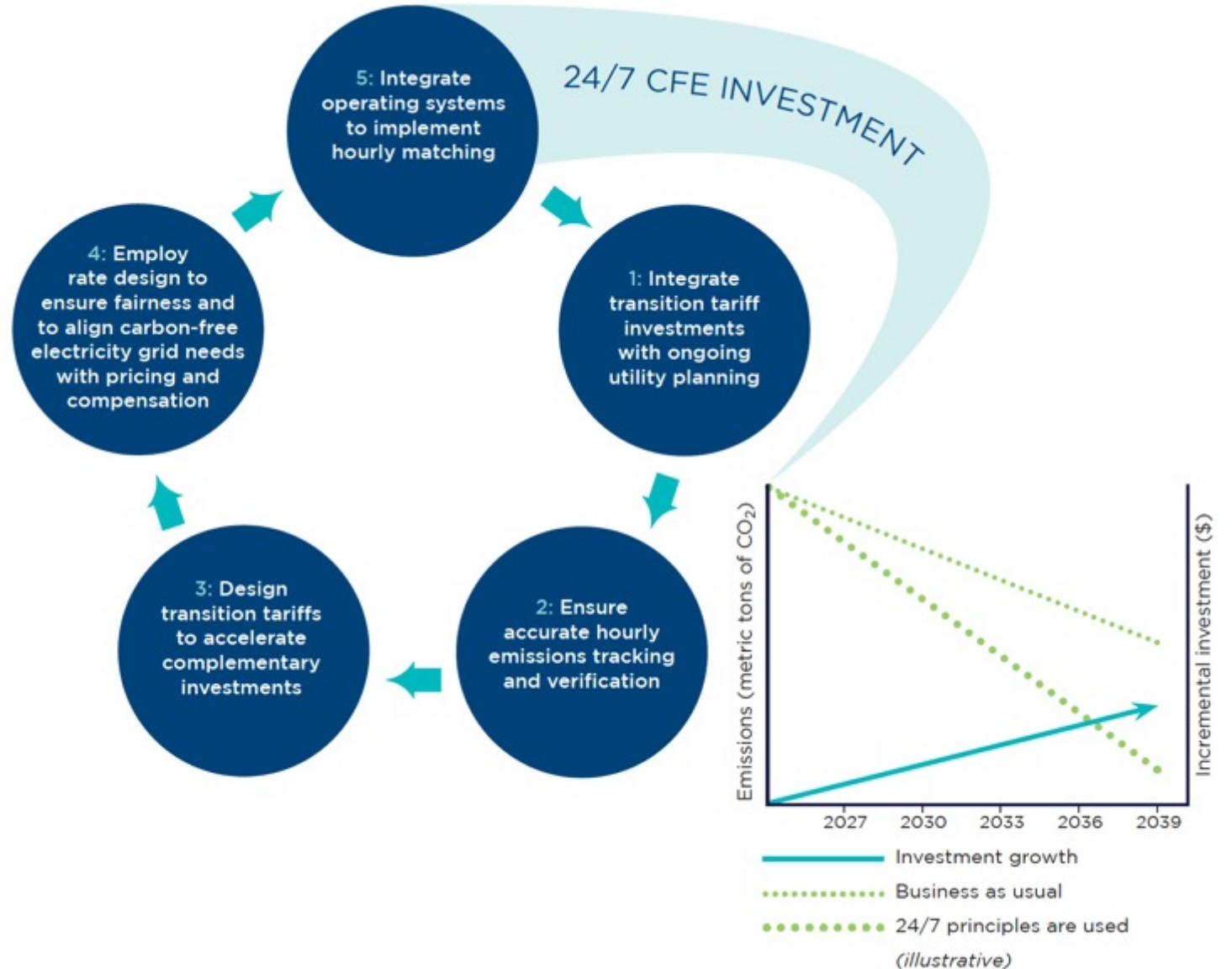
## Utilities

- Existing customers are asking (e.g., federal facilities)
- New customers are asking (e.g., data centers)
- Clarifies capital investment priorities vis-à-vis non-utility investments
- Supports decarbonization public policies

# Five Fundamentals Drive an Effective Tariff and Equitable Rate Design

1. Integrate transition tariff investments with ongoing utility planning.
2. Ensure accurate hourly emissions tracking and verification.
3. Design transition tariffs to accelerate complementary investments.
4. Employ rate design to ensure fairness and to align carbon-free electricity grid needs with pricing and compensation.
5. Integrate operating systems to implement hourly matching.

# How Does a 24/7 Transition Tariff Drive Incremental Emissions Reductions?





# Integrate Transition Tariff Investments With Ongoing Utility Planning

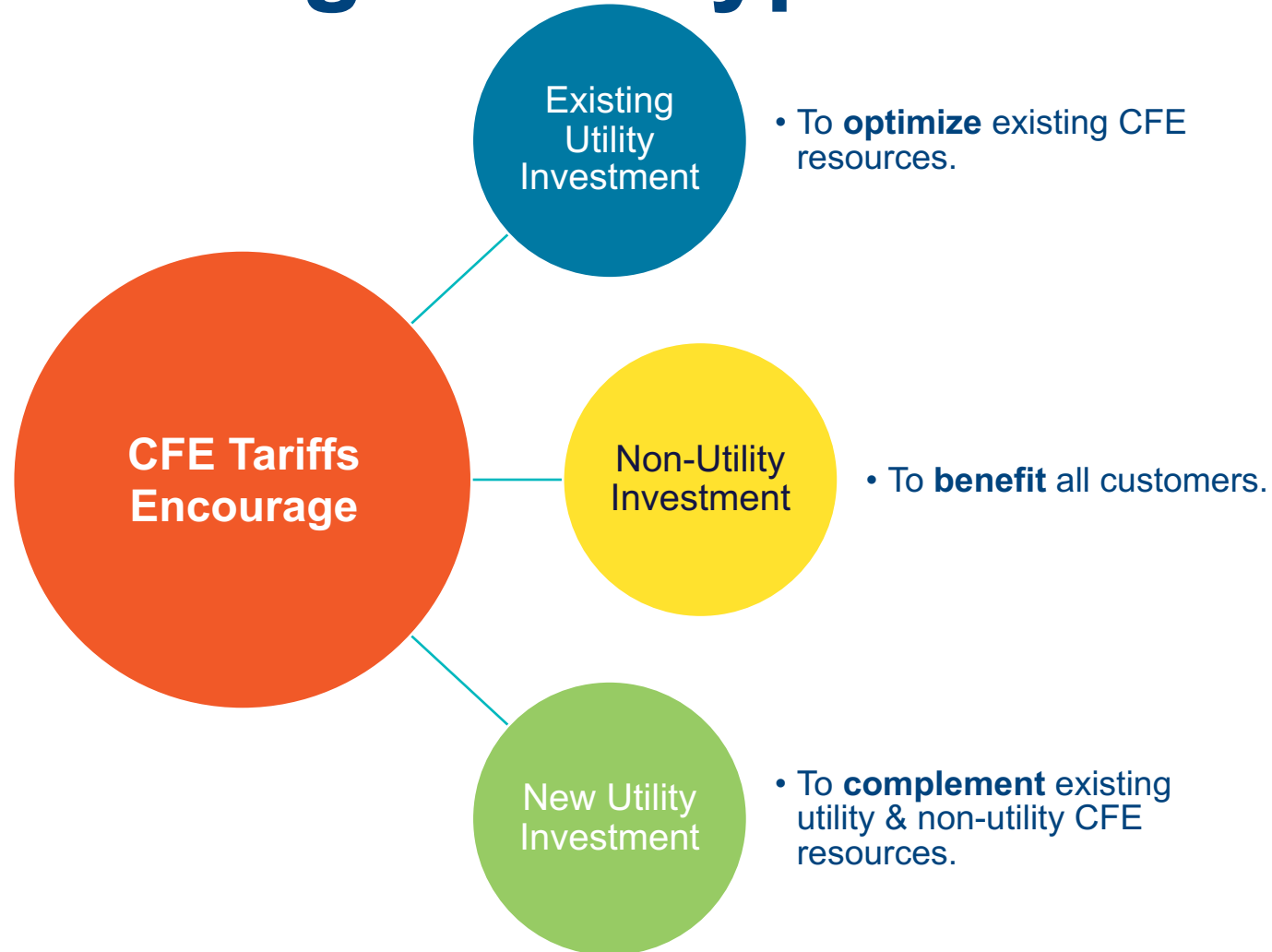


# Principles Inform Planning

Principle	Application
<b>Aggregated supply matched to aggregated demand</b>	CFE tariffs require a series of one-to-one obligations (load-serving entity* to customer) that are collectively met using a many-to-many relationship (i.e., many supplies to many demands).
<b>Time-matched procurement</b>	CFE tariffs attribute the emissions from electricity generation to the same hour as the customer's consumption.
<b>Geographic deliverability</b>	CFE tariffs identify the market and geographic boundaries within which the utility or load-serving entity will procure generation resources to match with customer load.
<b>Technology neutrality</b>	CFE tariffs may include any carbon-free electricity technology.
<b>Enabling of new resources</b>	CFE tariffs focus on enabling new clean electricity generation that supports the rapid decarbonization of electricity systems.
<b>Attributional market-based emissions accounting</b>	Utilities implementing CFE tariffs will depend on "attributional, market-based" emissions accounting that proceeds from the bottom up, where actual, individual resource-by-resource generation is attributed using the contractual obligations between the owners of individual resources and their customers.
<b>Measurable system impact</b>	Resource planning uses both attributional and consequential accounting to estimate the emissions impact of the new CFE resources that are supporting the tariff or product offering.
<b>Fairness to all participants</b>	CFE resources will have benefits and costs, and these should be allocated fairly between participants and nonparticipants alike.

*\* We use the term "load-serving entity" to include utilities in regulated jurisdictions and utilities and retail suppliers in restructured jurisdictions.*

# CFE Tariffs Integrate 3 Types of Investment



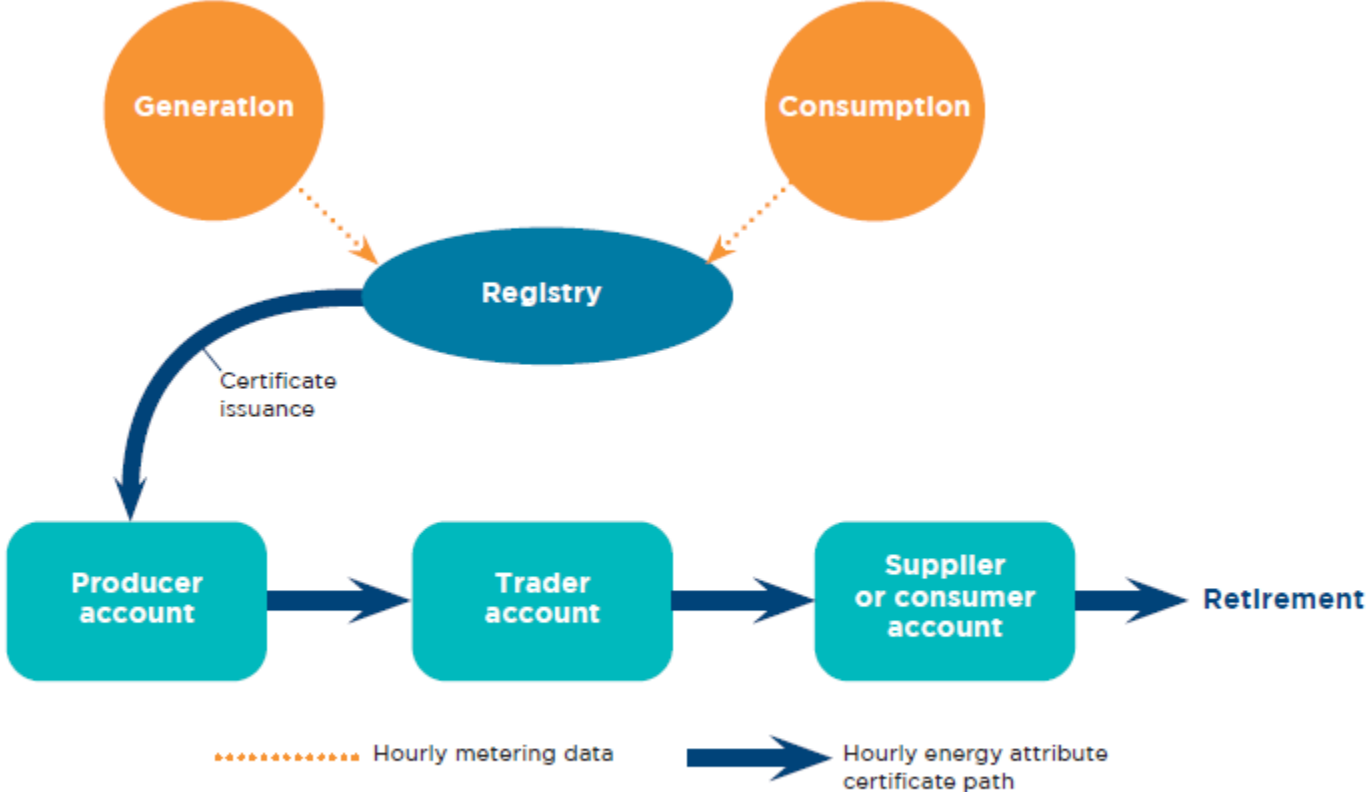
# Recommendations

- **Recommendation 1:** Implement transition tariffs that are based on 24/7 carbon-free electricity **principles** and integrate them with utility resource **planning**.
- **Recommendation 2:** Implement the process recommended by the NARUC-NASEO energy planning task force as 24/7 transition tariffs are integrated, **with an eye toward immediate progress and longer-term alignment**.



# Ensure Accurate Hourly Emissions Tracking and Verification

# Basic Requirements for Hourly Matching



Source: Adapted from EnergyTag. (2021). *EnergyTag and Granular Energy Certificates: Accelerating the Transition to 24/7 Clean Power*

# Standardization and Adoption of Emissions Tracking Procedures and Related Practices

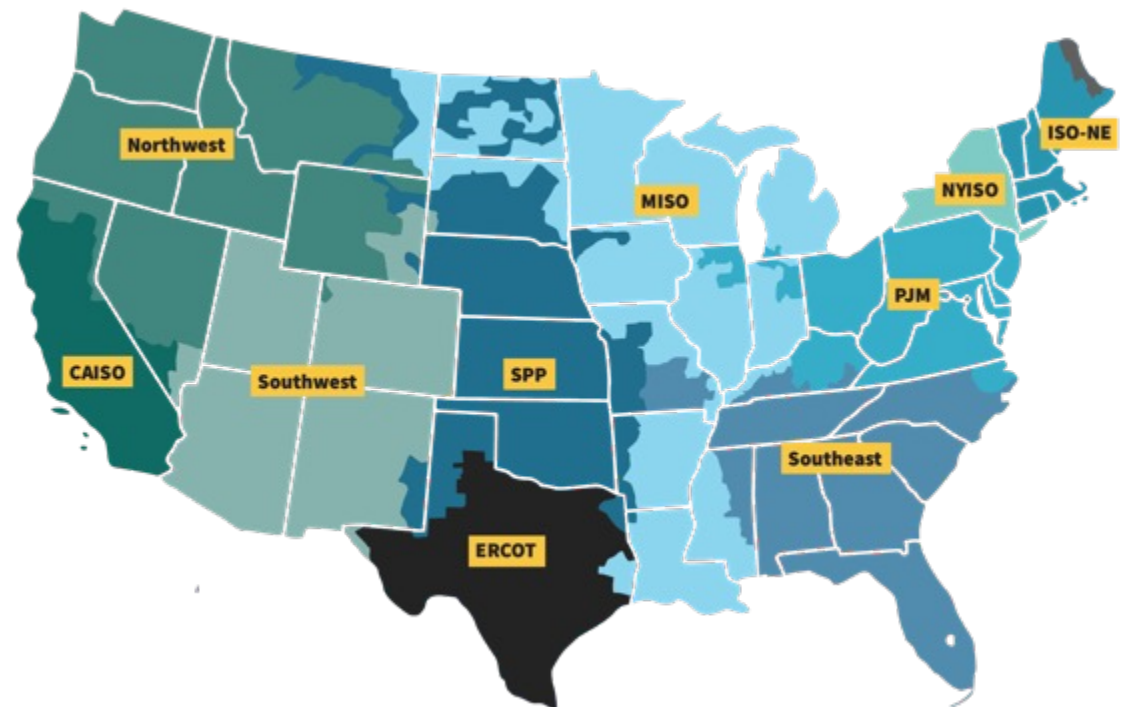
- **Recommendation 1:** Load-serving entities should provide hourly customer load data in a standardized format.
- **Recommendation 2:** Employ **consequential** and **attributional** accounting to understand, respectively, the **effects on system emissions** and the emissions characteristics of **resources procured** to match consumer load.

# Standardization and Adoption of Emissions Tracking Procedures and Related Practices

- **Recommendation 3:** Rely on the publicly available emissions data or best available calculated emissions and energy data to populate energy attribute certificates.

# Standardization and Adoption of Emissions Tracking Procedures and Related Practices

- **Recommendation 4:**  
Define geographic market boundaries based on energy delivered, or capable of being delivered, into one's local service area.



Source: FERC



# Standardization and Adoption of Emissions Tracking Procedures and Related Practices

- **Recommendation 5:** States should ensure that participating and nonparticipating consumers are treated fairly in the allocation of existing carbon-free electricity in a load-serving entity's resource mix to customers under a 24/7 tariff.

**News Release** > Entergy Arkansas, U.S. government sign first MOU to work toward 24/7 carbon-free electricity

For Immediate Release

**Entergy Arkansas, U.S. government sign first MOU to work toward 24/7 carbon-free electricity**

---

11/15/2022



# Design Transition Tariffs to Accelerate Complementary Investments

# Customer Investments and Other Non-Utility Investments Can Keep Costs Down and Control Risks for All Customers

- **Recommendation:** Factor in existing investments while providing transparency to customers, so that the program can ensure that customer-driven investments are truly complementary and accelerate decarbonization.



# Employ Rate Design to Ensure Fairness and to Align Carbon-Free Electricity Grid Needs With Pricing and Compensation

# Ratemaking for 24/7 Transition Tariffs Happens in a Policy Context



Provision of safe, reliable and resilient service



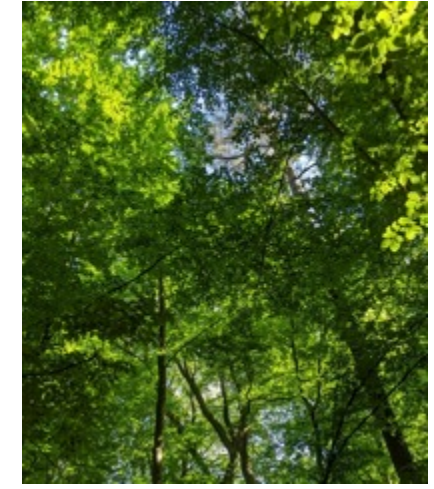
Societal equity



Administrative feasibility



Innovation and competition



Public health and environmental goals

# Ratemaking Goals for 24/7 Are Familiar

- Effectiveness in yielding total revenue requirements
- Customer understanding and acceptance
- Equitable allocation of costs and the avoidance of undue discrimination
- Efficient price signals that encourage optimal customer behavior

# Ratemaking Points of Emphasis in Establishing a Transition Tariff

- Establish the rate structure
- Define eligible load
- Establish incremental costs from the 24/7 program
- Establish incremental benefits of the 24/7 program resources
- Establish the duration of the tariff arrangement

# Recommendations Supporting a 24/7 Transition Tariff that Benefits All

- **Recommendation 1:** Determine net costs using integrated planning.
- **Recommendation 2:** Allocate net costs of CFE to participating customers.
- **Recommendation 3:** Design incentives to manage the demand side.
- **Recommendation 4:** Plan to co-optimize customer and utility investments.





# Integrate Operating Systems to Implement Hourly Matching

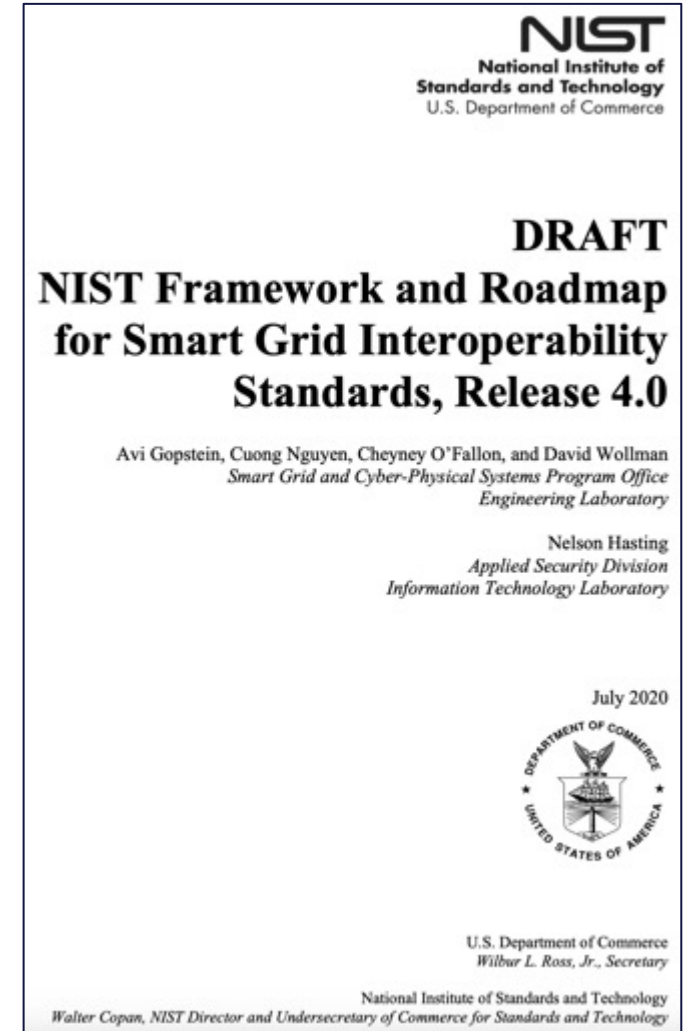
# Standards are Evolving to Guide the Way



Emissions First Partnership



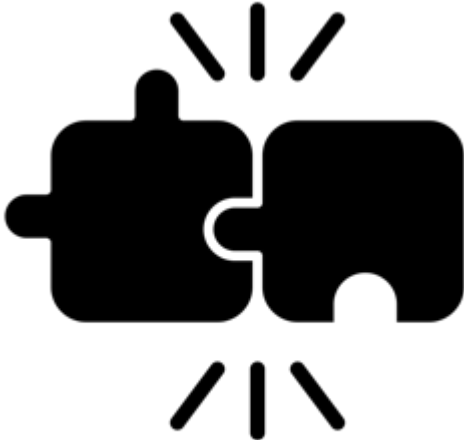
OLF ENERGY  
CARBON DATA SPECIFICATION  
CONSORTIUM



# The First Step is Straightforward: Report Hourly



Created by Justin Blake  
from Noun Project



Created by Danang Marhendra  
from Noun Project



Created by Luis Prado  
from Noun Project

# Recommendations

- **Recommendation 1:** Consult the latest standards when developing CFE products.
  - Following standards from NIST, EnergyTag and others helps ensure that CFE products can be seamlessly tracked and traded between power marketers, utilities and the balancing authorities charged with ensuring local reliability.
- **Recommendation 2:** Implement CFE products based on *actual data first*.
  - Ex-post implementations of CFE products represent a relatively straightforward and necessary first step in CFE tracking and system development.
- **Recommendation 3:** Implement CFE products based on *forecast data second*.
  - Ex ante implementations of CFE products will be needed to reach 100% CFE, which implies the need for high levels of system integration.

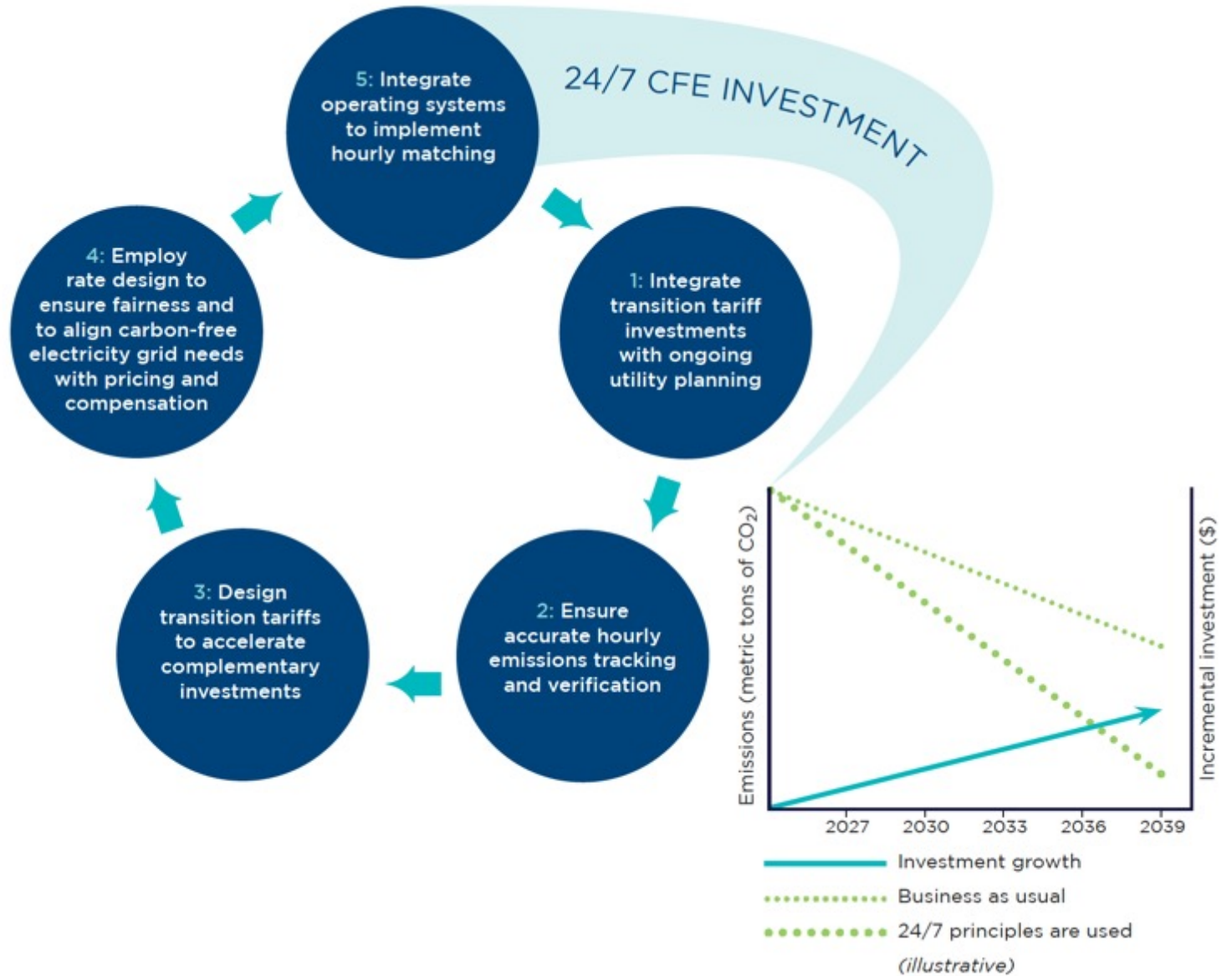


# Conclusion: Focus on the Fundamentals

# Five Fundamentals Drive an Effective Tariff and Equitable Rate Design

1. Integrate transition tariff investments with ongoing utility planning.
2. Ensure accurate hourly emissions tracking and verification.
3. Design transition tariffs to accelerate complementary investments.
4. Employ rate design to ensure fairness and to align carbon-free electricity grid needs with pricing and compensation.
5. Integrate operating systems to implement hourly matching.

# A Well-Designed 24/7 Transition Tariff Accelerates Investments and Innovation That Drive Emissions Down



# Download Report:

Summary  
Paper:



Technical  
Paper (with  
Appendices):







## About RAP

Regulatory Assistance Project (RAP)<sup>®</sup> is an independent, global NGO advancing policy innovation and thought leadership within the energy community.

Learn more about our work at [raponline.org](https://raponline.org)