Hourly EACs

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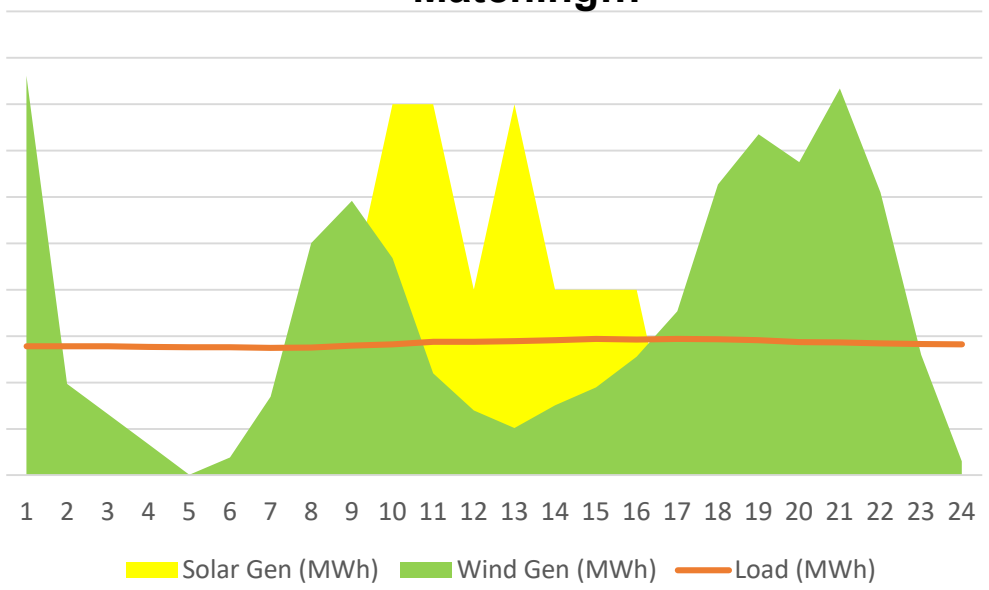
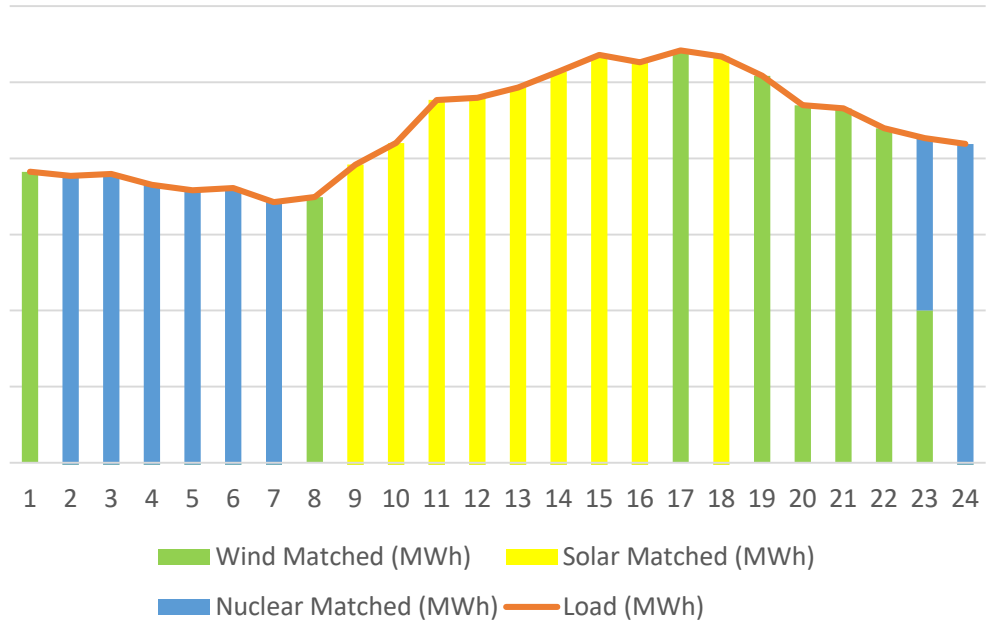
Hourly EACs Support the Evolution of Clean Energy Procurement

- 24/7 Hourly CFE brings focus to the technologies, policies, and market mechanisms needed to balance carbon-free generation and load and to reliably and affordably decarbonize the U.S. electric grid
- Buyers, generators, and policy makers need a more robust way to track progress toward decarbonization in every hour of the year

From Annual Matching…



…To Hourly Matching



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The Hourly EAC Ecosystem Is Developing Rapidly

Technology & Infrastructure

M-RETS
pjm EIS Environmental Information Services
CPower
FLEXIDAO
ELECTRICITY MAPS
granular energy
Powerledger
Cleartrace

Suppliers

Constellation
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Agreements signed with Microsoft and ComEd

NVEnergy
Georgia Power
entergy
ENGIE
energy harbor
aes
DUKE ENERGY

Buyer Community

Google
IRON MOUNTAIN
comed AN EXELON COMPANY
Microsoft
NUCOR
CEBA
Clean Energy Buyers Association
DEFENSE LOGISTICS AGENCY
THE NATION'S COMBAT LOGISTICS SUPPORT AGENCY
GSA

Policy Initiatives

White House Executive Order 14057
100% CFE + 50% Hourly-Matched by 2030

45V Clean H2 Standards
Require hourly matching for electrolytic H2 production

Inflation Reduction Act

Clean Peak Energy Standard

MA Clean Peak Standard
Hourly CFE is an evolution of existing policy

Stakeholder Initiatives

24/7
UN 24/7 CFE Compact
137 Signatories and counting

RAP
24/7 Carbon-Free Transition Tariffs Project

EPRI
24/7 CFE Interest Group
24/7 CFE Buyers Forum

ZEROgrid

Standards

EnergyTag
EnergyTag
Standards and guidelines for Granular Certificates (GCs)

CRS
CRS Clean Energy Accounting Project
137 Signatories and counting

GREENHOUSE GAS PROTOCOL
GHG Protocol Updates
Reporting of hourly CFE under consideration

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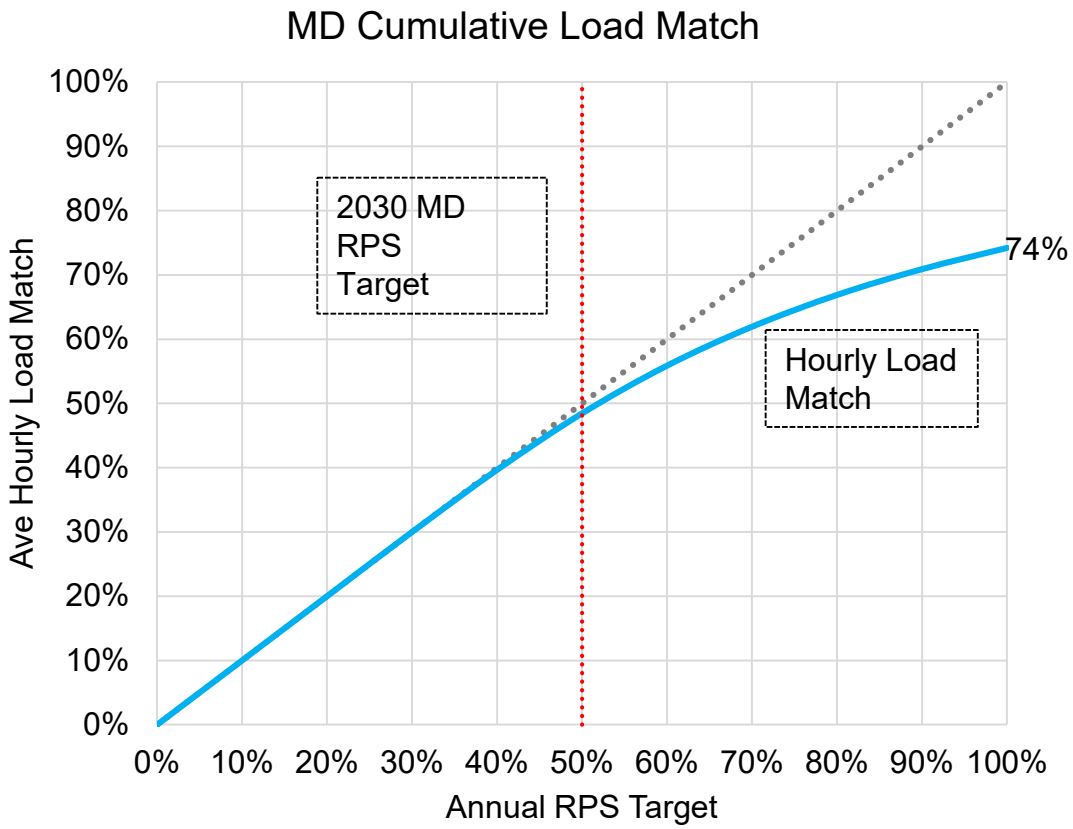
Annual RPS Is Unlikely to Eliminate Carbon Emissions from Electricity Consumption

- For example, a Maryland RPS load match with renewable generation equal to 100% of load on annual basis will only match about 74% of hourly load
- The hourly time-match of renewable generation begins to deviate from the annual total at a roughly 50% annual RPS target
- The declining load match of each increment of renewables above 50% demonstrates the diminishing effectiveness of a renewable-only program



Annual clean energy procurement targets offering diminishing returns

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Tracking Systems Are Taking Up the Challenge

Tracking System	Resources Tracked	Number of RE Generating Facilities*	Hourly Functionality Available	Current Plans to Implement or Expand Hourly Tracking
PJM-GATS	All	364,936	**Yes**	**Yes**
M-RETS	RE and alternative energy	3,402	**Yes**	**Yes**
WREGIS	RE	10,140 (includes ~160,000 aggregated DG units)	No	**Yes**
ERCOT	RE	381	No	**Yes**
NAR	RE	884	**Yes (Pilot)**	Still in pilot
NYGATS	All	1,957	No	No
NC-RETS	RE	1,393	No	No
MIRECS	RE	241	No	No

Source: CRS, updated to reflect recent initiatives
*Figures as of May 2023

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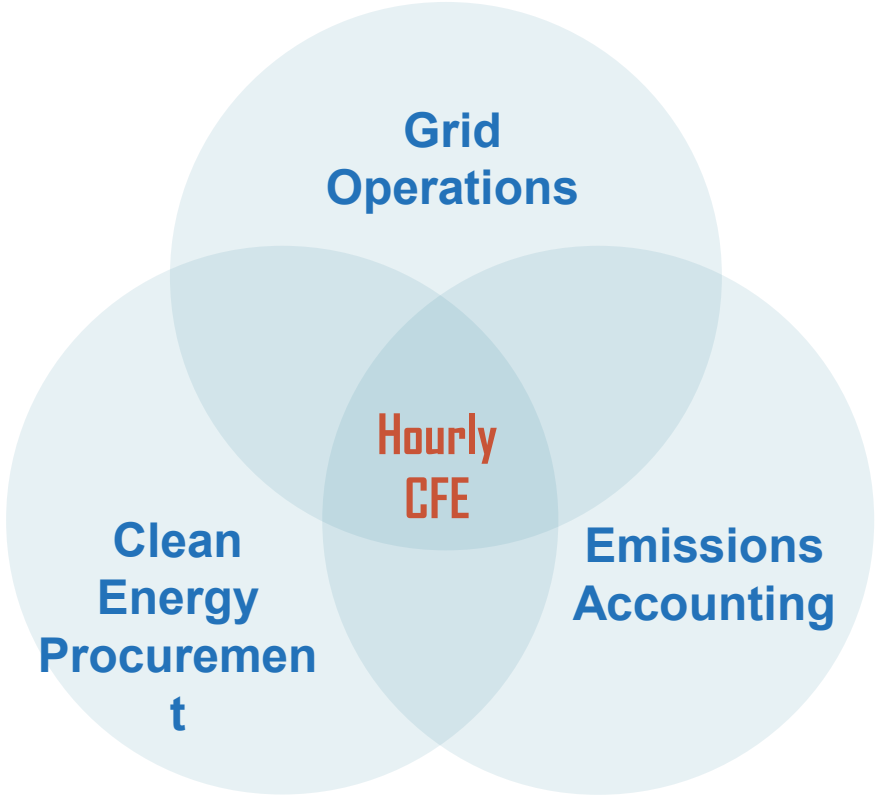
The Next Step

- Customers are looking beyond annual procurement of clean energy and unbundled clean energy attributes towards supply options that match generation with hourly consumption
- Markets, policy, and infrastructure are evolving to enable or require hourly clean energy products, but more work needs to be done
- ISO-NE is already a leader in tracking all generation sources. Tracking hourly attributes is the next step

Hourly CFE Enables Deep Decarbonization



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