

**Session: Meeting Energy and Sustainability Goals
with Renewables**



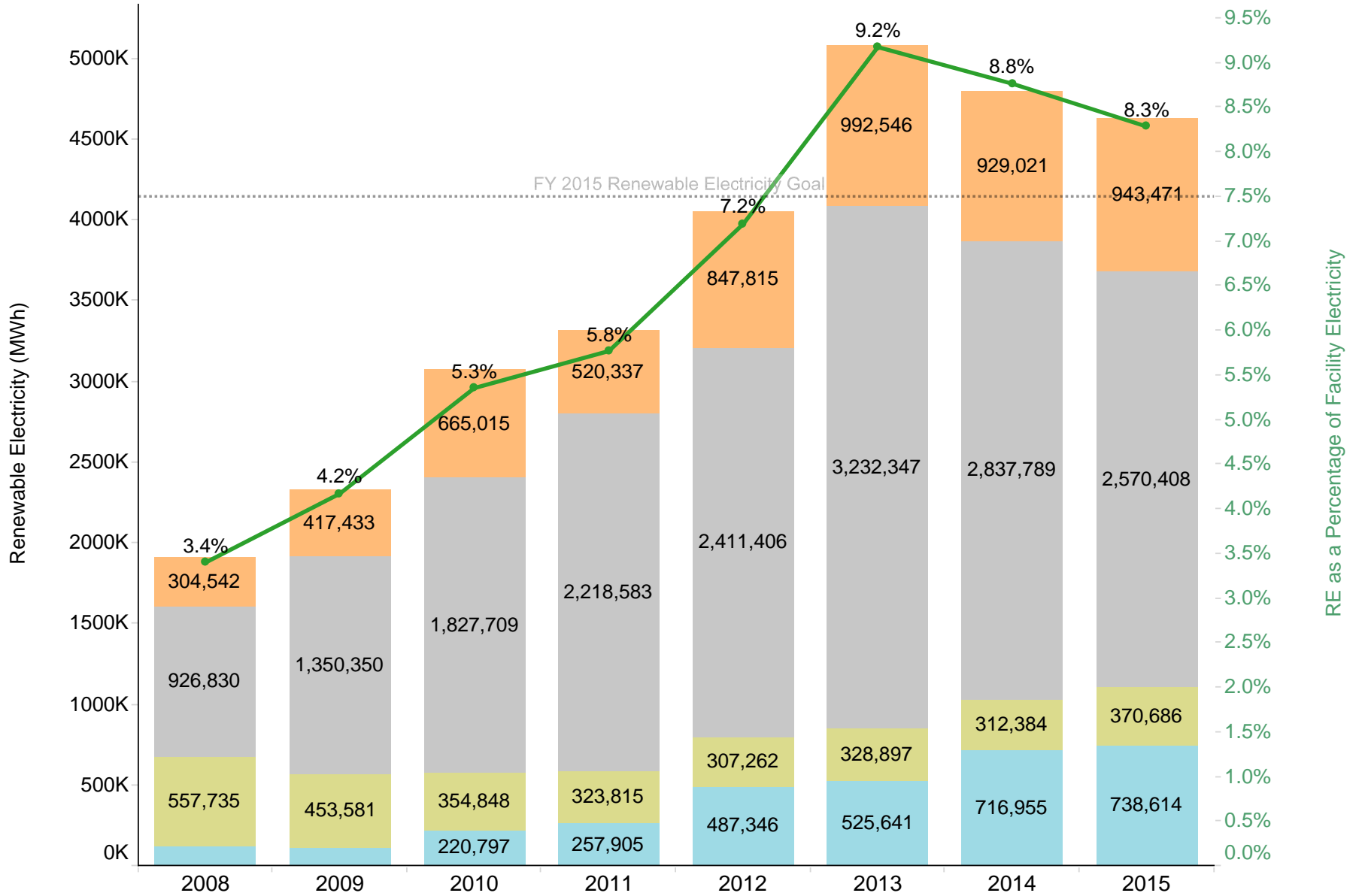
Leveraging Your Renewable Energy Options to Maximize Goal Progress

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August 10, 2016

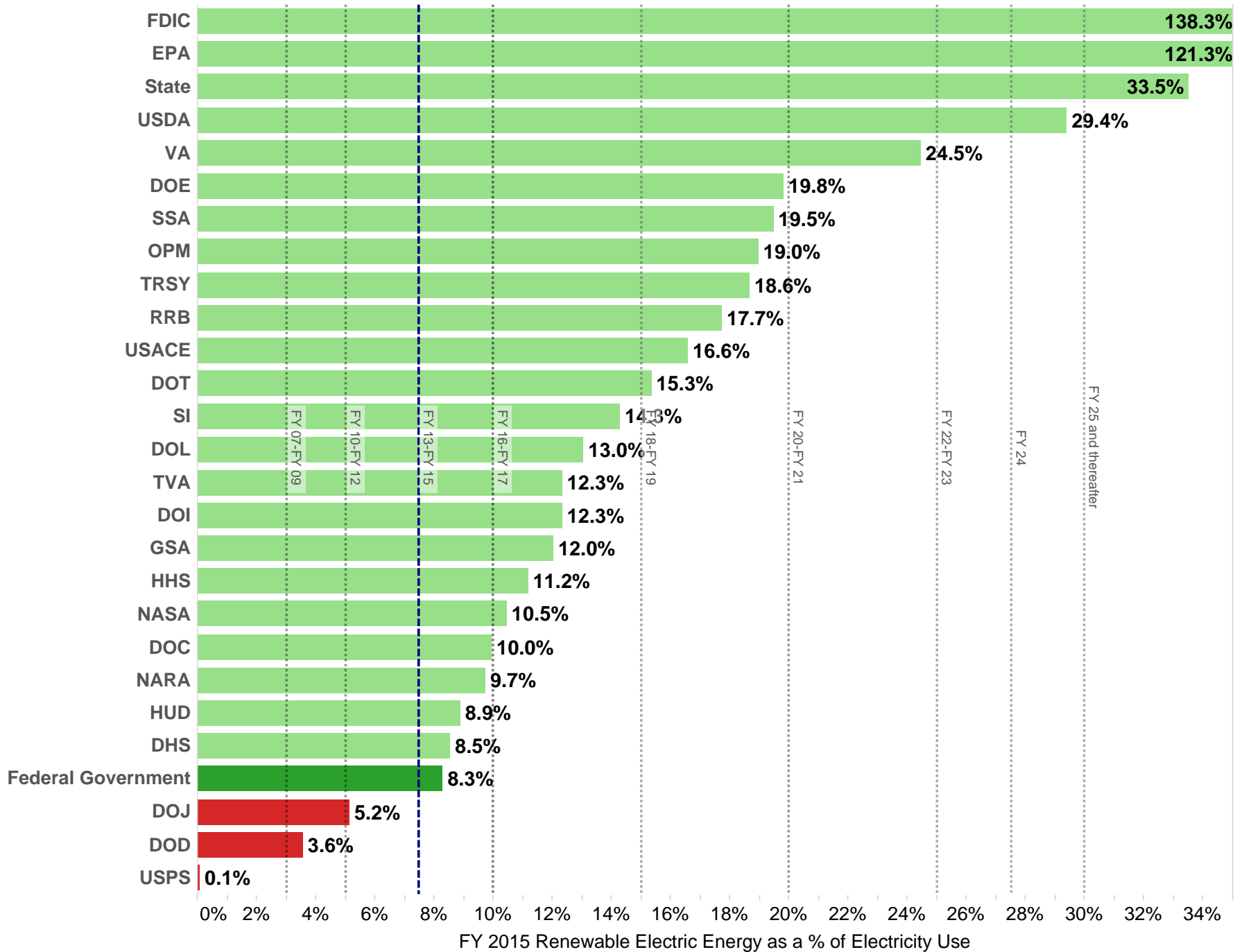
Federal Government Renewable Electricity Use



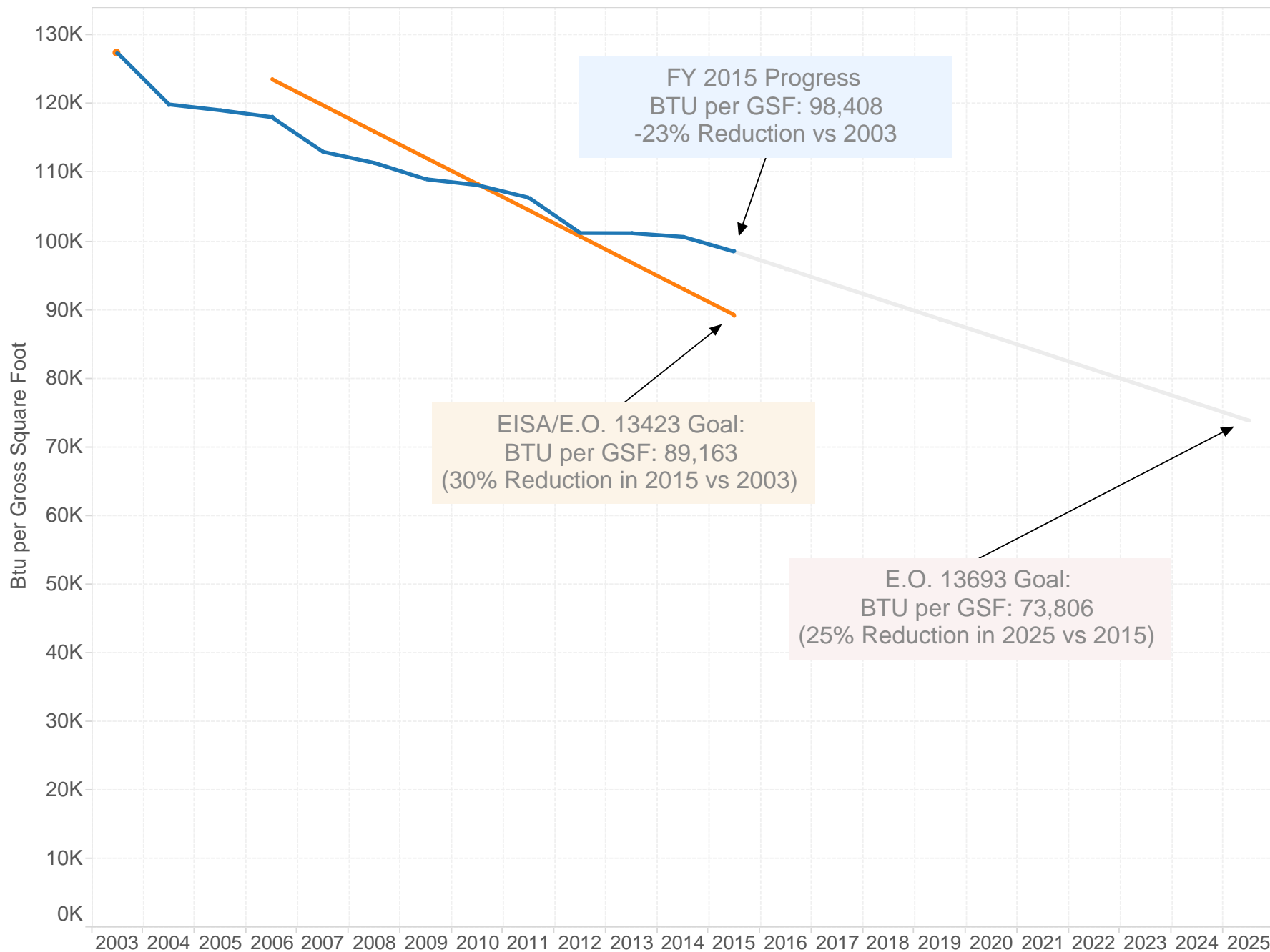
Renewable Energy Category

- Renewable Energy as a Percentage of Electricity Use
- Bonus Credit for On-Site Renewable Energy
- REC Purchases (Off-Site)
- Electricity Purchases and Agency Owned (Off-Site)
- Agency Owned (On-Site)

Federal Agency Progress Toward Renewable Electricity Target



Overall Government Progress Toward Facility Energy Efficiency Goals, FY 2003 - FY 2015



FY 2015 Progress
BTU per GSF: 98,408
-23% Reduction vs 2003

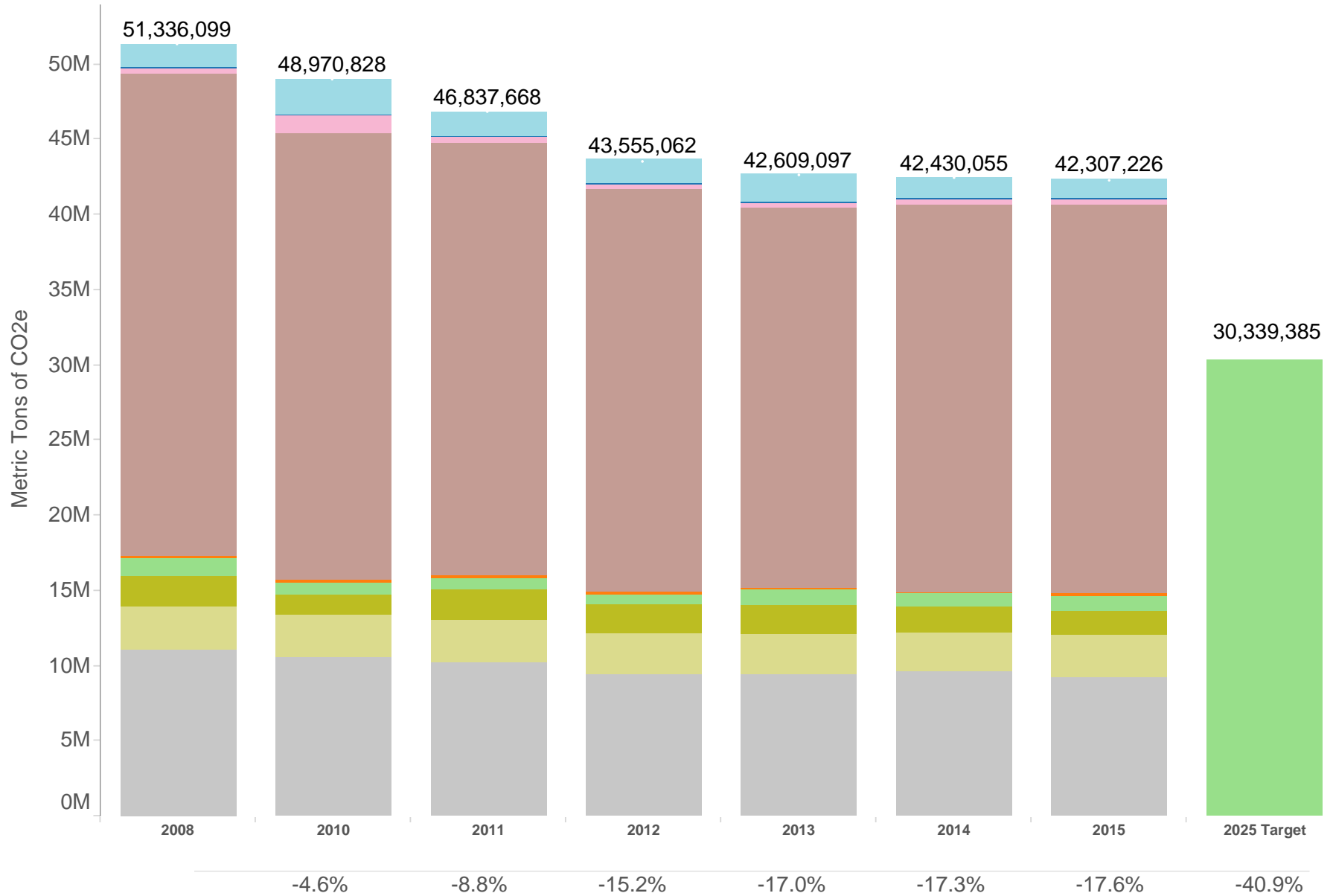
EISA/E.O. 13423 Goal:
BTU per GSF: 89,163
(30% Reduction in 2015 vs 2003)

E.O. 13693 Goal:
BTU per GSF: 73,806
(25% Reduction in 2025 vs 2015)

Energy Intensity Reduction Goals

- Facility energy intensity reduction goals (2.5% per year, reaching 25% by 2025 vs. 2015)
 - Numerator subtracts all **on-site renewable energy (renewable electric energy and renewable thermal energy, with RECs or REC replacements)** whether in goal subject or goal excluded facilities
 - Numerator subtracts measured and verified energy conservation in goal excluded facilities
 - Numerator subtracts weather-normalized energy intensity reported in CTS if it is advantageous
 - Agencies that achieved 30% or greater reduction in Energy Intensity during the 2003 to 2015 goal period may choose an alternative target of a combined total reduction in Energy Intensity of 47.5% from 2003 to 2025

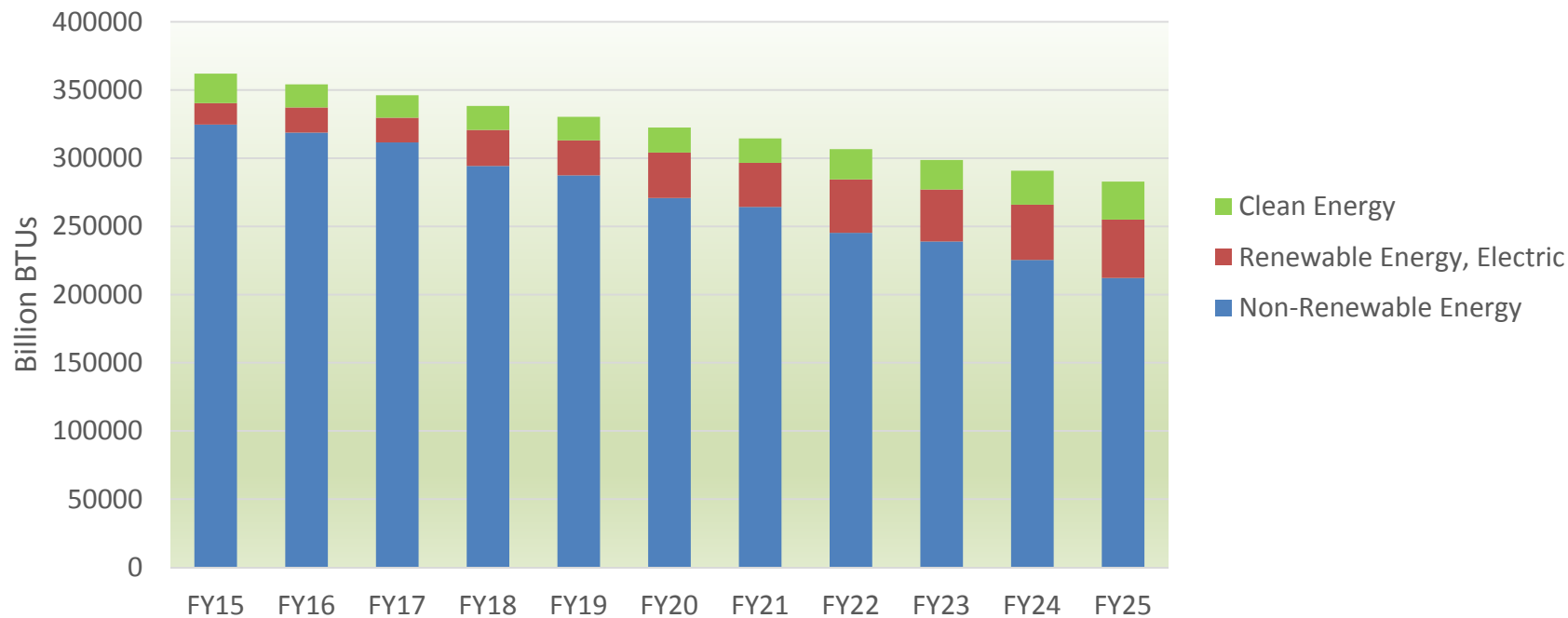
Federal Government Progress toward Scope 1 and 2 Greenhouse Gas Reduction Goal



- Steam and Hot Water
 - Chilled Water
 - Other
 - Net Electricity Emissions
- Industrial Process Emissions
 - Fugitive Emissions and Incinerators
 - Vehicles and Equipment
 - Covered Fleets
- Stationary Emissions
 - Target Emissions Total

Clean and Renewable Energy Targets


Clean Energy and Renewable Energy Targets for Federal Facilities



	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24	FY25
Renewable Electric Target	7.5%	10.0%	10.0%	15.0%	15.0%	20.0%	20.0%	25.0%	25.0%	27.5%	30.0%
Clean Energy Target		10.0%	10.0%	13.0%	13.0%	16.0%	16.0%	20.0%	20.0%	22.5%	25.0%
Cumulative Energy Intensity Reduction		2.5%	5.0%	7.5%	10.0%	12.5%	15.0%	17.5%	20.0%	22.5%	25.0%

Importance of Renewable Electric Target for Clean Energy

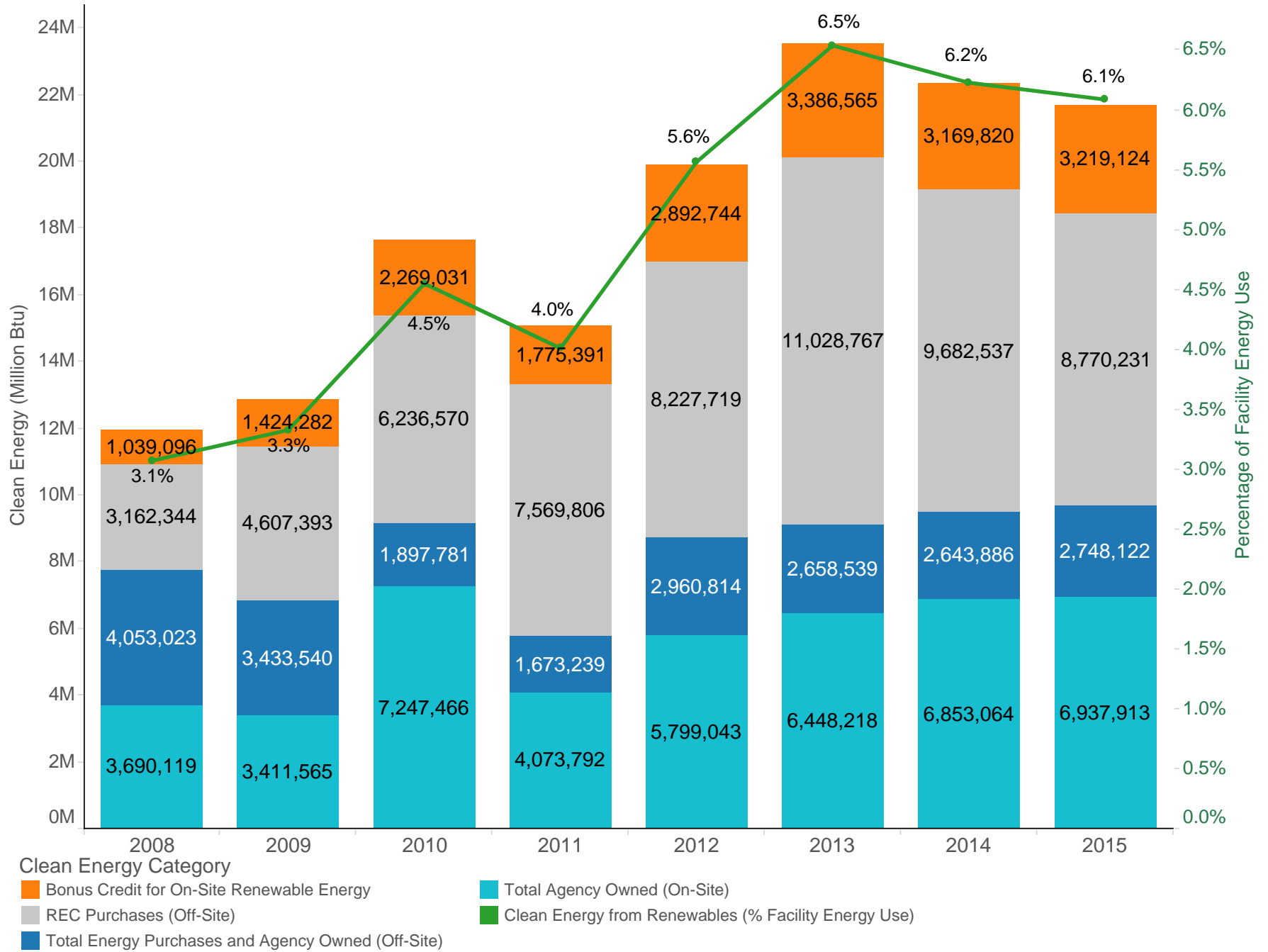
Renewable Electric Target: By FY 2025, 30 percent of the total amount of electric energy consumed by each agency shall be renewable energy, 10% in **FY16** and FY17, 15% in FY18 and FY19, 20% in FY20 and FY21, 25% in FY22 and FY23, 27.5% in FY24, 30% in FY25 and thereafter.

- Agencies to use renewable energy based on following priorities:
 1. Install agency-funded renewable energy on-site and retain **RECs**
 2. Contract for energy that includes the installation of a renewable energy project on-site or off-site from a Federal facility and retains RECs;
 3. Purchase electricity and corresponding RECs (bundled RECs); and
 4. Purchase (unbundled) RECS 
- **When purchasing unbundled RECs or bundled RECs (last two priorities) sources must have been placed into service within 10 years prior to start of the fiscal year to count under this goal.**
- Agencies must still own RECs or have clear ownership of equivalent renewable and environmental attributes to meet renewable electric target

Clean Energy in EO 13693

- $$\text{Clean Energy} = \frac{\text{Renewable Electric Energy} + \text{Alternative Energy}}{\text{Total Facility Energy}}$$
- **Renewable Electric** Energy includes:
 - solar,
 - wind,
 - biomass,
 - landfill gas,
 - ocean (including tidal, wave, current, and thermal),
 - geothermal,
 - **geothermal heat pumps**,
 - Micro turbines (powered by renewable fuels),
 - municipal solid waste, or
 - new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project;
- No longer includes hydrokinetic, does not allow hydroelectric energy added to an existing dam that has not been used for hydropower in the past
- **Alternative Energy** includes:
 - Thermal renewable energy (including from CHP and fuel cell systems)
 - Small modular nuclear reactor output
 - CHP and fuel cells powered by fossil fuels, but only the amount of output left after subtracting the amount of natural gas (thermal component) and/or electricity (eGRID factor) that would produce the same amount of BTUs/electricity
 - Other alternative energy: if agreed, FEMP can petition CEQ on behalf of agencies to include mechanical, ocean/aquifer, and daylighting in the “Other” category.

Federal Government Clean Energy Use as a Percentage of Federal Facility Energy Consumption



Choices

- Sources On/Off Federal or Indian Land?
- Owned, or Purchased?
- Energy, RECs, Null Power, None of The Above (hosted-only)?
- Electric or Non-Electric?
- Short-term or Long-term commitment?
- Which Technology/Fuel?
- Age of the Source (purchases only)?
- Geography (State RPSs)

Implications

- Energy Intensity Impact
- Bonus-Eligibility
- GHG Impact
- Clean Energy
 - Renewable Electric (w bonuses)
 - Alternative Energy
- Cost/Benefit of Action
 - Energy Security
 - Environmental
 - Meet E.O./Statutory goals

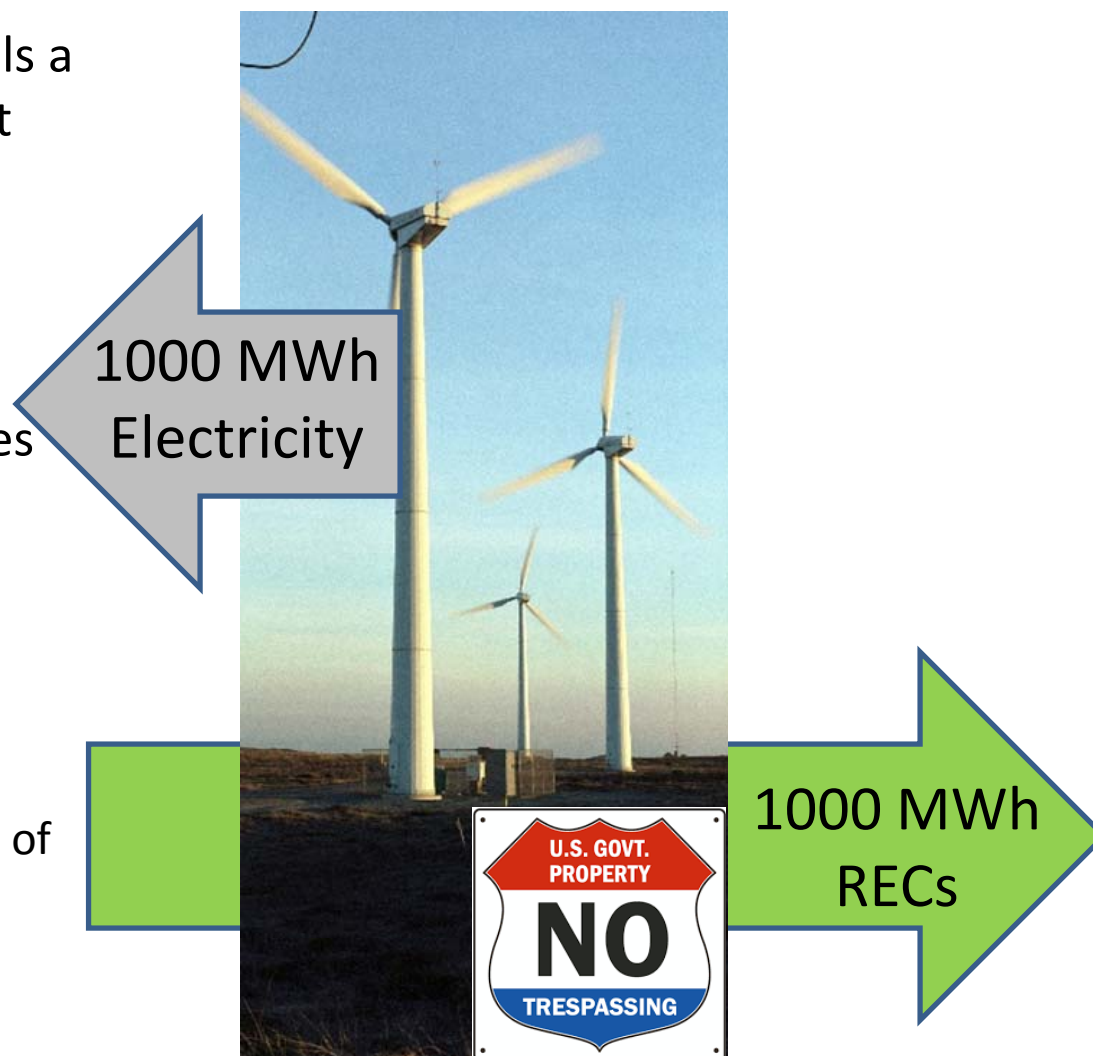
Leverage: On Federal or Indian Land



- Bonus for renewable electric target:
 - RECs, Green Power, or Agency-Owned
 - On- or Off- the agency site
- On-site generation/consumption at an agency facility is SUBTRACTED from energy intensity – electric or thermal
- If agency does not own the RECs, but purchases replacement RECs:
 - Allows reclaiming the bonus for electric sources
 - If agency uses energy (null power), subtracts from energy intensity for thermal and electric sources
- If source is not on-site,
 - The source has to be less than 10 years old; except
 - If the source is **owned** by a Federal agency or Indian tribe there is no age limit except for hydropower (placed in service after 1/1/1999)
- Counts toward the DOD goal (no bonuses) even without RECs

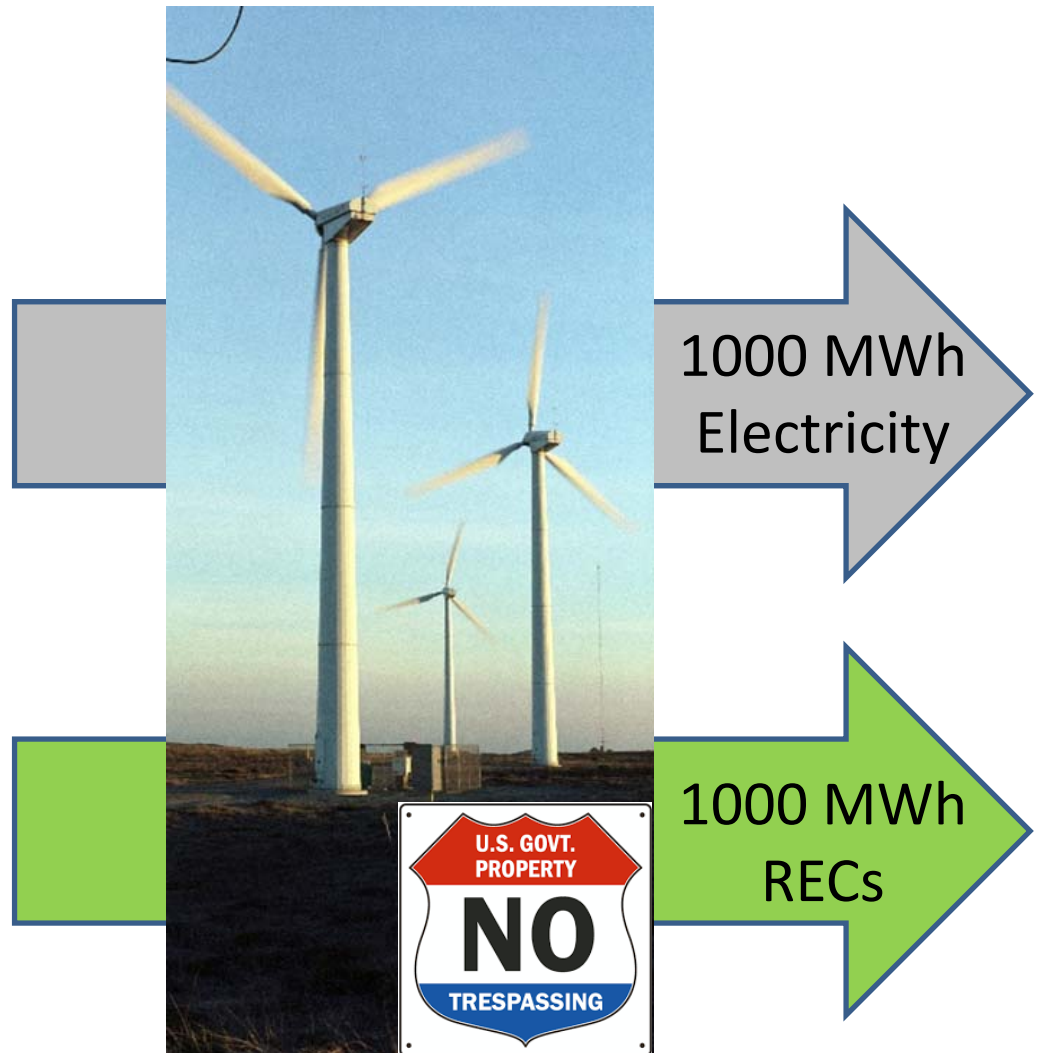
On Federal or Indian Land, REC Replacement, Energy Used by Agency

1. Agency or a developer installs a renewable electricity project on Federal or Indian Land
2. Agency arranges to use the electricity, but not the RECs
3. Agency or developer disposes of the RECs, uses part of proceeds to reduce agency electricity costs
 - up to \$400/MWh for sale of RECs, replaced by RECs at \$1/MWh, leaves \$399 MWh of potential cost reduction



On Federal or Indian Land, REC Replacement, Energy Not Used by Agency

1. Developer installs a renewable electricity project on Federal or Indian Land
2. Agency only hosts the project, does not use the electricity, developer sells electricity
3. Developer disposes of the RECs, agency does not directly benefit beyond terms of land use agreement
4. Agency buys replacement RECs



On Federal or Indian Land, REC Replacements

- REC replacements restore all agency benefits for Renewable Electricity Target; Clean Energy progress; and lower or zero GHG Emissions from the RECs
- ONLY if the agency uses the energy from the source, the Energy Intensity Reduction is restored
- Agency renewable electricity cost usually lower, if it uses the electricity
- Agency/Federal government receives whatever compensation is negotiated/allowed for land use
- Third-party REC purchaser uses them to comply with renewable portfolio standards or other renewable purchase requirements
- REC replacements can be from any qualified off-site renewable source that meets the 10-year age restriction

What Could Possibly Go Wrong: REC Replacement Sensitivities

- Ownership of RECs from agency on-site projects can raise issues of government property and proper disposal – consult procurement experts
- The age restriction on REC sources is a new requirement that is applied to REC purchases every year; must be less than 10 years old
- Land use issues involving developers siting projects on Federal land is complex and can vary by agency – expert advice is needed

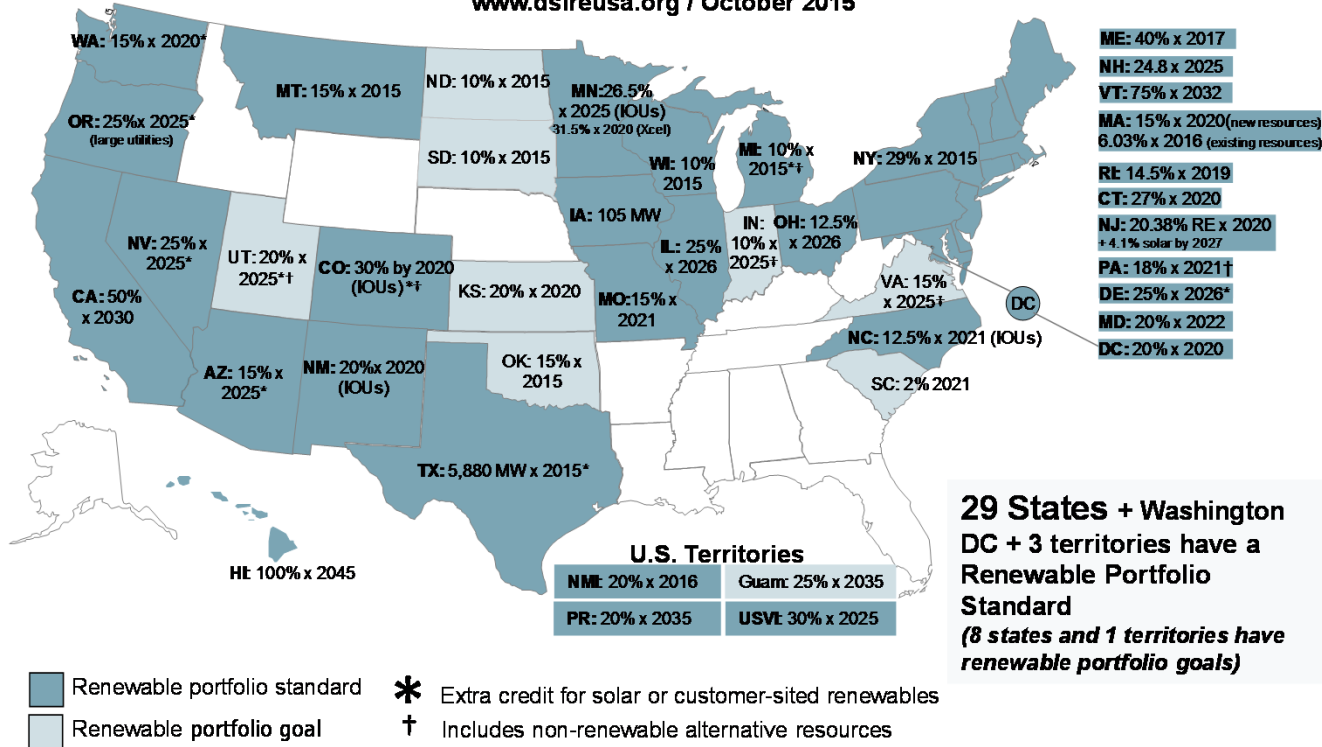
What Could Possibly Go Wrong: REC Replacement Sensitivities



Energy Efficiency & Renewable Energy

Renewable Portfolio Standard Policies

www.dsireusa.org / October 2015



29 States + Washington DC + 3 territories have a Renewable Portfolio Standard (8 states and 1 territory have renewable portfolio goals)

- Value of RECs in RPS compliance markets depends on:
 - Timing
 - Location
 - Competition
 - Source

Renewable Electric Energy From Projects on Federal or Indian Land

Agency Owns Energy and RECs from Project	Hosted Project (RECs)		Hosted Project (Green Energy)		RECs Transferred but Energy Used by Agency	
	All RECs	Partial RECs	All RECs	Partial RECs	No RECs	
Yes	Yes	Yes, Replacement Allowed	Yes	Bonus	Replacement Allowed	Bonus for Renewable Electric Target
Yes	No	No	Yes	Yes, Replacement Allowed	Yes, Replacement Allowed	Energy Intensity Reduced
0*	0*	0*	0*	>0*	>0***	GHG Impact
Yes	Yes	Partial (except DoD)	Yes	Partial (except DoD)	No (except DoD)	Clean Energy
Yes	Yes	Yes, Replacement Allowed	Yes	Yes, Replacement Allowed	Yes, Replacement Allowed	Renewable Electric Target
No	No	No	No	Yes	Yes	Null Power
100%	100%	0-99%****	100%	1-99%****	0%	REC %age

*0 GHG emissions except biomass. ** 0 GHG emissions from project, impact on emissions estimated by amount of avoided emissions at location of source. ***Energy is no longer renewable so emissions based on equivalent amount of conventional energy, electricity for electricity, natural gas for non-electric. ****0% Hosted Project (RECs) is only for projects that are on a Federal/Indian site but deliver no power or RECs, basically the project is just using Federal land. When Hosted Project (Green Energy) goes to 0% it becomes RECs Transferred but Energy Used by Agency.

Renewable Non-Electric Energy From Projects on Federal or Indian Land

Agency Owns Energy and RECs from Project	Hosted Project (RECs)		Hosted Project (Green Energy)		RECs Transferred but Energy Used by Agency	
	All RECs	Partial RECs	All RECs	Partial RECs		
No	No	No	No	No	No	Bonus
Yes	No	No	Yes	Yes, Replacement Allowed	Yes, Replacement Allowed	Energy Intensity Reduced
0*	0*	0*	0*	>0*	>0***	GHG Impact
Yes	Yes	Partial (DoD Full)	Yes	Partial (DoD Full)	No	Clean Energy
No	No	No	No	No	No	Renewable Electric Target
No	No	No	No	Yes	Yes	Null Power
100%	100%	0-99%****	100%	1-99%****	0%	REC %age

*0 GHG emissions except biomass. ** 0 GHG emissions from project, impact on emissions estimated by amount of avoided emissions at location of source. ***Energy is no longer renewable so emissions based on equivalent amount of conventional energy, electricity for electricity, natural gas for non-electric. ****0% Hosted Project (RECs) is only for projects that are on a Federal/Indian site but deliver no power or RECs, basically the project is just using Federal land. When Hosted Project (Green Energy) goes to 0% it becomes RECs Transferred but Energy Used by Agency.

NOT On Federal or Indian Land (Mostly Purchases)



- RECs, Green Power, or Agency-Owned sources of renewable electricity count
- Off-Site sources ADD to energy intensity – electric or thermal
- If agency does not own the RECs but does use the energy, GHG emissions are calculated as if the energy came from the grid (electric) or fossil fuels (thermal)
- Generates emissions from T&D losses
- The source has to be less than 10 years old:
 - Unless it is owned by a Federal agency, or
 - The purchase mechanism qualifies was initiated as a long-term contract (10 years or greater) as explained in REC Guidance
- Counts toward DOD Goal, with or without RECs

Purchases from Off-Site, Not On Federal or Indian Land

3. Purchase electricity and corresponding RECs; and

4. Purchase RECS

- Renewable electricity target and clean energy target
 - Electricity counts toward both, thermal energy only toward clean energy
 - No bonus for electricity because these categories are not on Federal or Indian land
- GHG emissions
 - Calculated based on emissions from fuel/source
 - Electricity purchases cause Scope 3 emissions from T&D losses
- Do not reduce energy intensity because they are not on-site

REC Ownership and Claims

- Renewable electric, clean energy, energy intensity and GHG claims for renewable energy sources require agencies own the renewable and related attributes – as embodied in RECs
- Be careful of claims of “using,” “hosting,” “generating,” “avoiding emissions” without ownership of attributes
- FTC Green Guides explains their view of false claims concerning renewable energy use in §260.15 Renewable energy claims
- REC ownership requirement does not apply to DOD’s separate NDAA renewable energy goal at 10 U.S.C. § 2911(e)

Summary

- On-site projects (on Federal or Indian land)
 - deliver the most progress on agency goals
 - Renewable, Clean Energy, Energy reduction, GHG
 - are persistent in time and insulated from volatility in supply and cost
- Purchases of unbundled RECs and bundled RECs from off-site
 - offer short-term progress but are vulnerable to changes in supply and cost over time,
 - are subject to the new 10-year age restriction in most cases
 - Are good for sites with no renewable opportunities
 - Goals are agency-wide—consider portfolio approach

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- EO 13693, Planning for Sustainability in the Next Decade, www.gpo.gov/fdsys/pkg/FR-2015-03-25/pdf/2015-07016.pdf
- Implementing Instructions for Executive Order 13693 Planning for Federal Sustainability in the Next Decade, www.whitehouse.gov/sites/default/files/docs/eo_13693_implementing_instructions_june_10_2015.pdf
- Federal Renewable Energy Certificate Guide, Office of Federal Sustainability, Council on Environmental Quality sustainability.gov/Resources/Guidance_reports/Federal-Renewable-Energy-Certificate-Guide-June-16-2016-Final-Version.pdf