



RECs and GHG Offsets 101

Presented by

Conservation Services Group

Power-Gen International, New Orleans, LA

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Who is CSG?

- Founded in 1984; nonprofit corporation
- 300 staff, 12 offices nationwide
- US EPA Climate Leader - committed to Net Zero GHG emissions
- Design, develop, and deliver energy efficiency and clean energy programs and projects
- Clean Energy Markets Group founded in 2002 to assist Clean Energy Projects access emerging markets
- Transact ~ \$20 million in RECs per year

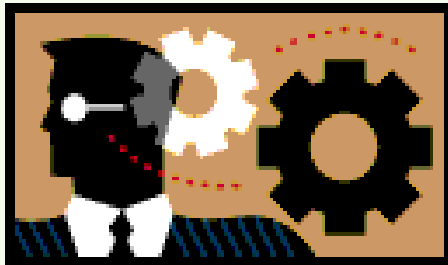


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Workshop goals

- Big concepts



- Resources





Agenda

- Concepts
 - Markets
 - Direct & indirect system attributes
 - Credits as fungible financial instruments
 - Markets as a regulatory tool

first break



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Agenda continued

- REC basics
- GHG basics

second break



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“The RECs Market”

- What qualities were buyers seeking?
- Were all RECs the same?
- What role did demand & supply play?
- What were barriers in finding a match?





Market types

- Natural



- Constructed





Players in REC and GHG markets



Market authority



Renewable generator



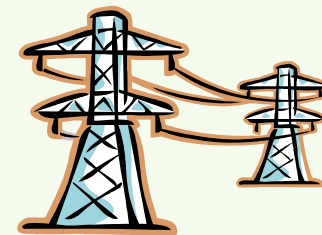
Fossil fuel generator



Liquidity provider
(broker/banker)



End user

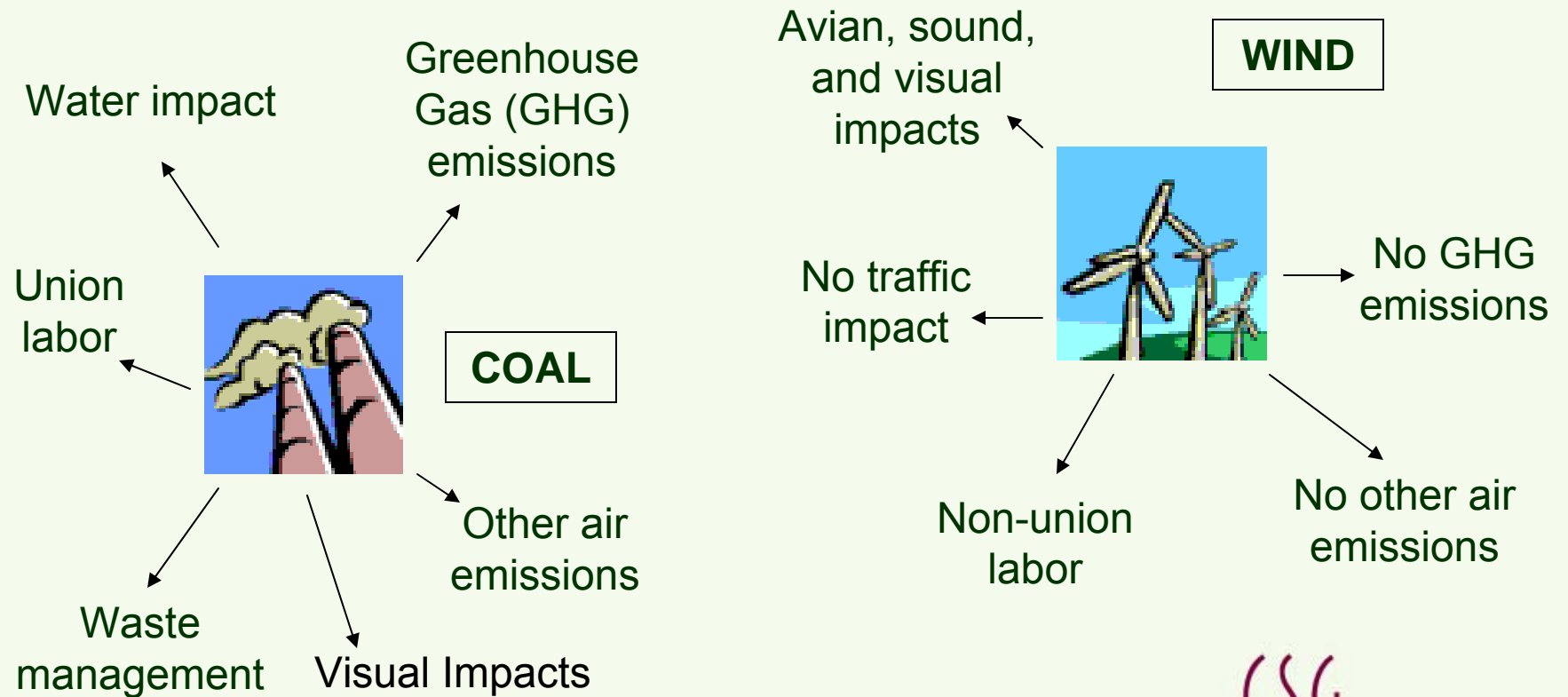


Distribution utility or
supplier



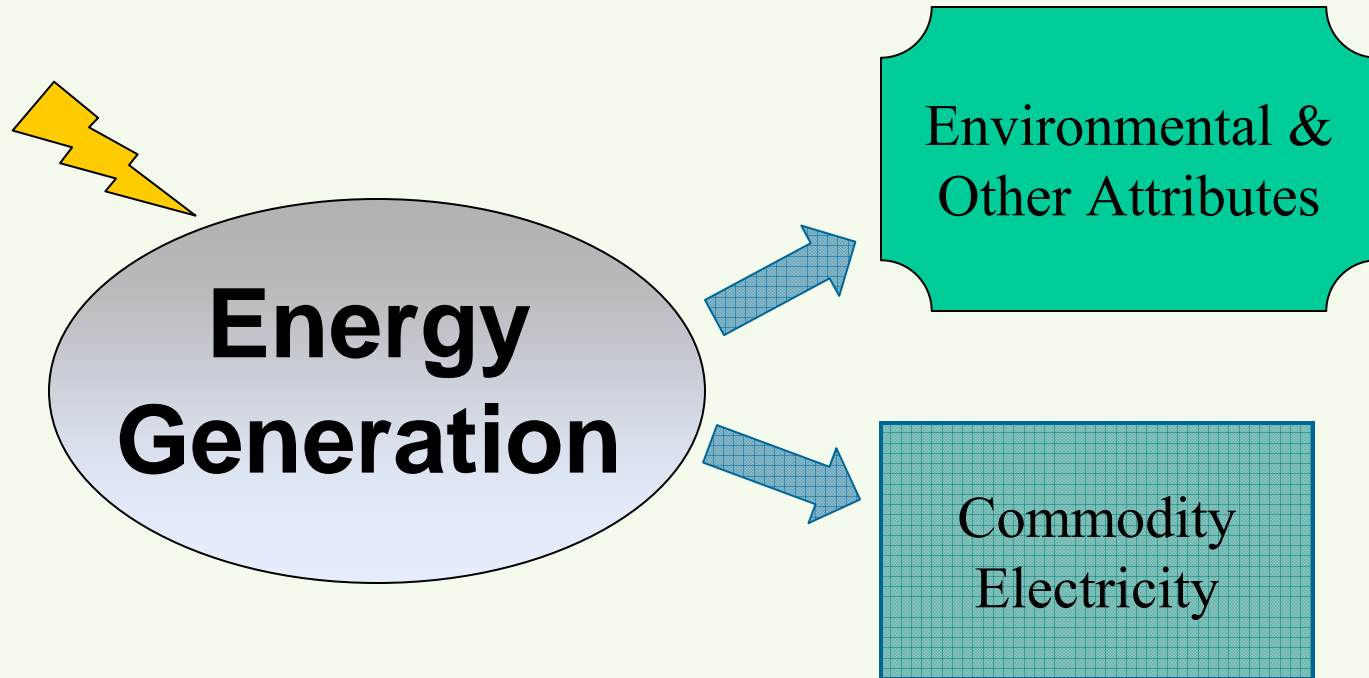


Attributes of electricity generation





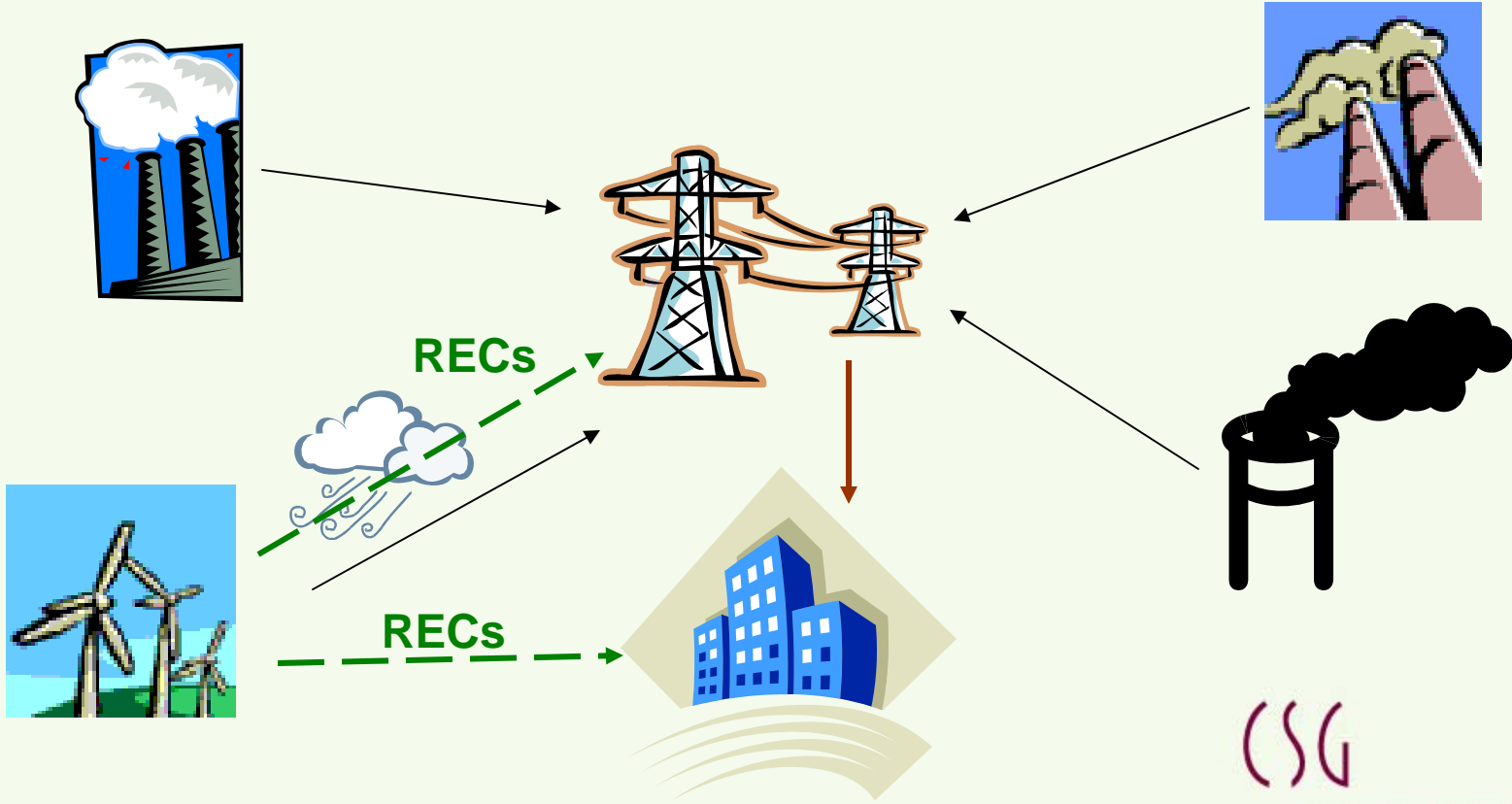
Unbundling attributes from energy





Indirect system attributes:

A conundrum for market authorities



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Indirect system impacts:

A conundrum for market design

- Which facility backed down?
- Quantity of emissions avoided?
- Who benefits from avoided emissions?
 - Generator that backs down?
 - Renewable generator?
 - If RECs are sold in voluntary market?
 - If RECs are sold for RPS compliance?
- Concerns about double counting





Credits: Fungible financial instruments

Financial instrument

- Certificate of ownership of a financial asset, such as a bond or a share.

Fungible

- You can't tell them apart. Something is fungible when any one single specimen is indistinguishable from any other. Somebody who is owed \$1 does not care which particular dollar he gets.

Ref: economist.com



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What is a REC?

- A **Renewable Energy Credit** is a tradable financial instrument that represents proof that one MWh of electricity has been generated using a **renewable**-fuel source within a given time frame
- Also called: Green Tags, Tradable Renewable Credits (TRCs), Renewable Energy Certificates





What is a GHG offset?

- Documentation that a **Project** reduced emissions of one ton of GHG measuring CO₂ equivalent
 - Permanent reduction
 - Additional to “business as usual”





How are RECs & GHG offsets similar?

- Financial instruments
- Credit market liquidity
- Project approval required
- Production/output documentation





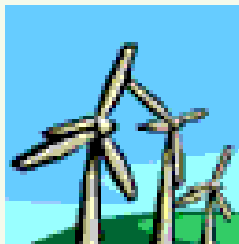
How are RECs & GHG offsets different?

- Eligibility requirements
- Certification authorities
- Denomination
 - RECs: MWh
 - Offsets: TCO₂e
- Geographic scope

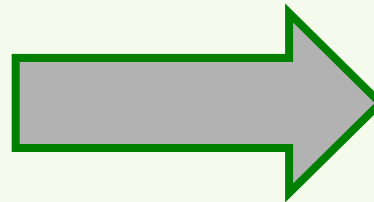
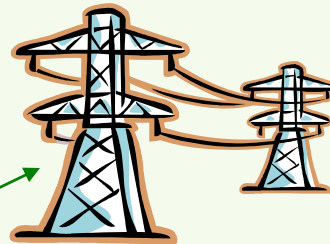
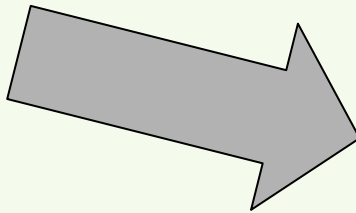




Renewable Portfolio Standard construct



Set RPS at X% of MWh sold to end use customers

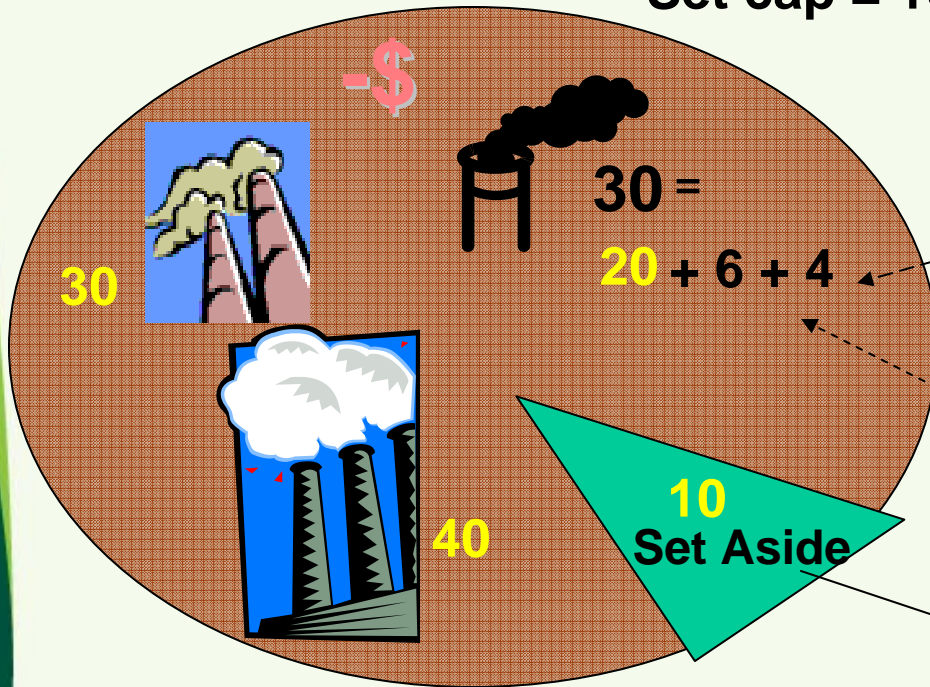


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GHG Cap & Trade construct

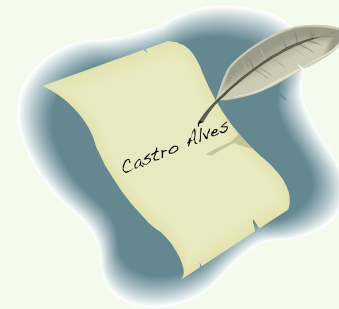
Set cap = 100 allowances



Allocation or Auction

+\$

Offset



Issued 4 credits for emissions reductions

+\$

Claim 6 allowances from Set Aside for zero emissions



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Recap of big concepts

- Constructed markets
- Buyers have preferences
- Attributes of generation (direct impacts)
- Indirect system impacts
- Market instruments
 - Allowance (“permit to pollute”)
 - Emission credit (“pollution reduction”)
 - RECs
- Offset (as a noun / as a verb)





Resources

- Definitions
- List of market authorities
- List of references
- Standard REC contract





Break Time!



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REC basics

- What does a REC include?
 - Power?
 - Attributes (direct impacts)?
 - Avoided emissions (indirect impacts)
 - Other environmental attributes?





7 REC characteristics important to buyers

- Vintage
- Location
- Operation date
- Technology
- Fuel source
- Grid-tied
- Qualification





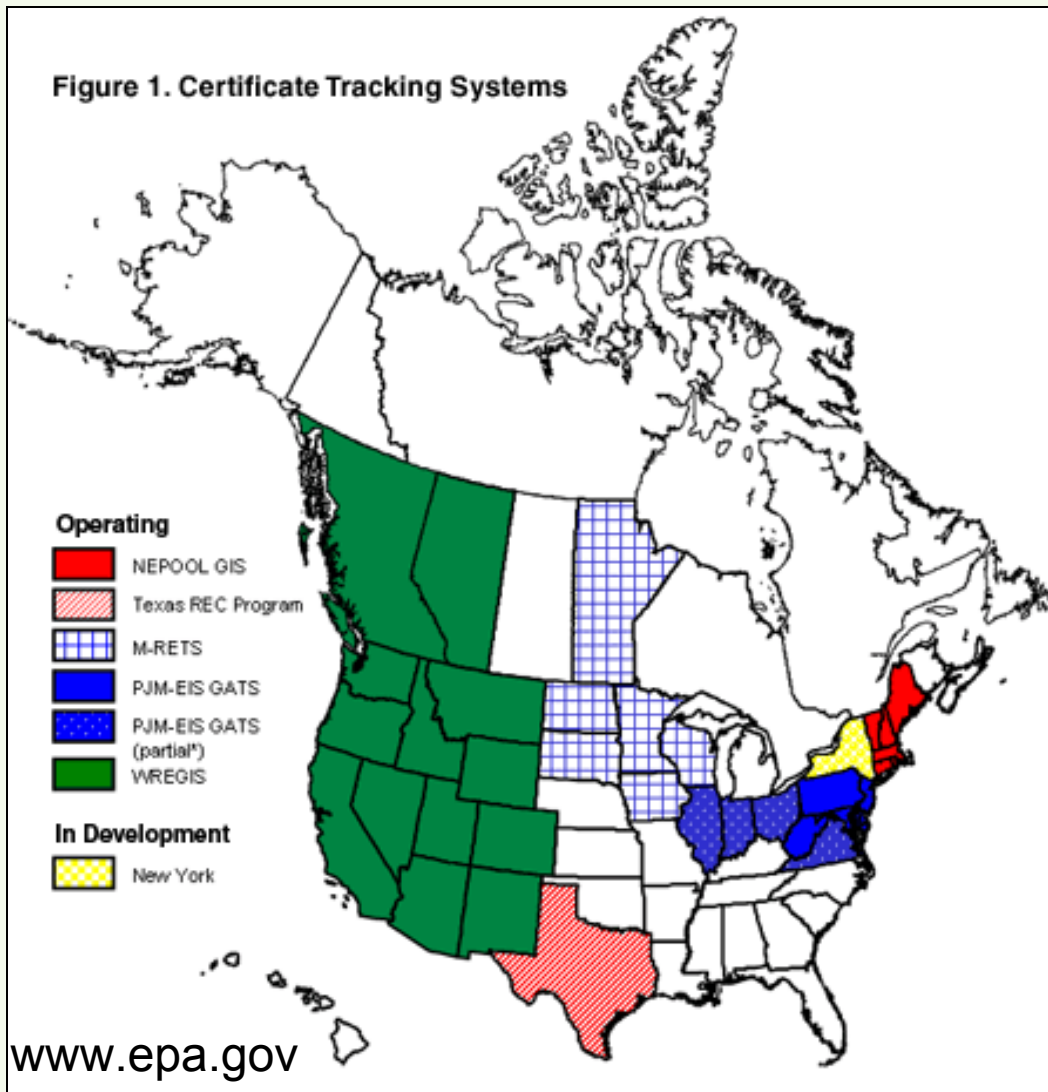
RECs: What needs to be verified?

- Does the project exist?
- What is the technology/fuel type?
- How much electricity is produced?
- No double counting.





Figure 1. Certificate Tracking Systems



Renewable Energy Certificate Tracking Systems



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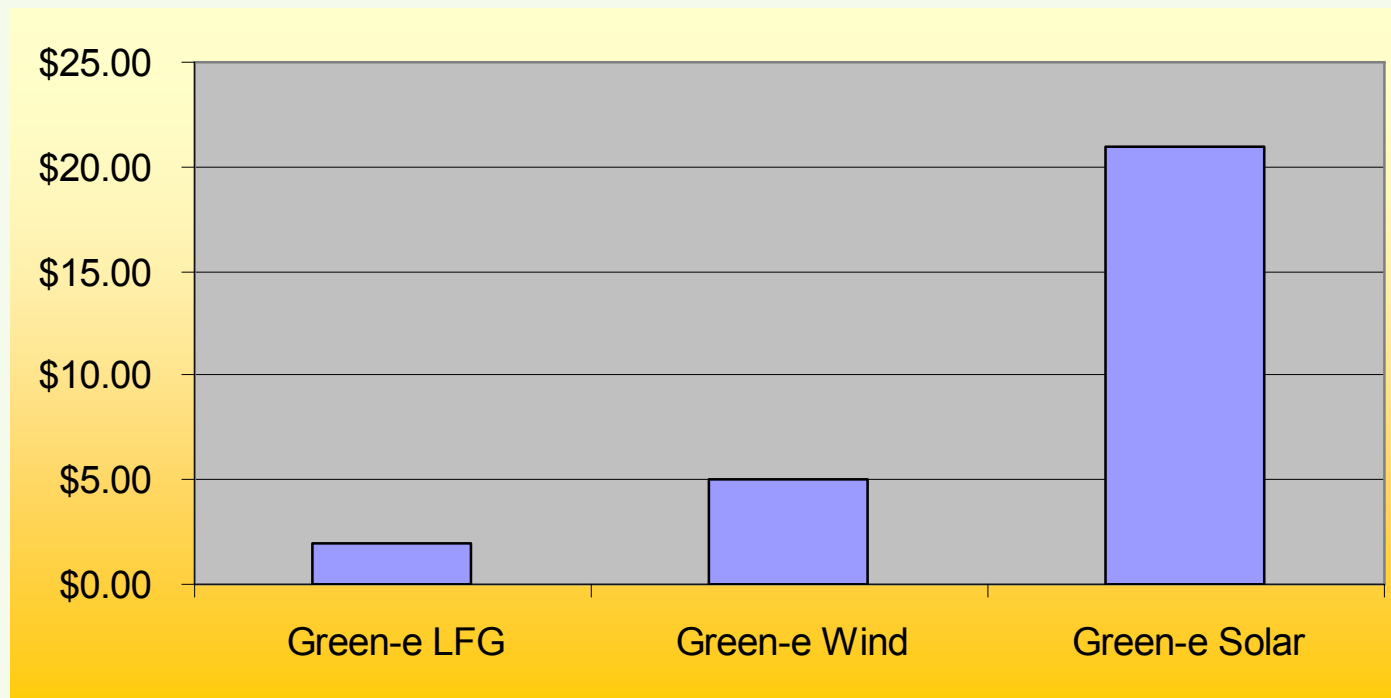
Voluntary markets

- Who are the buyers?
- Who are the sellers?
- What are key drivers?
- Is there money to be made?





Voluntary REC Markets Nov. 2007



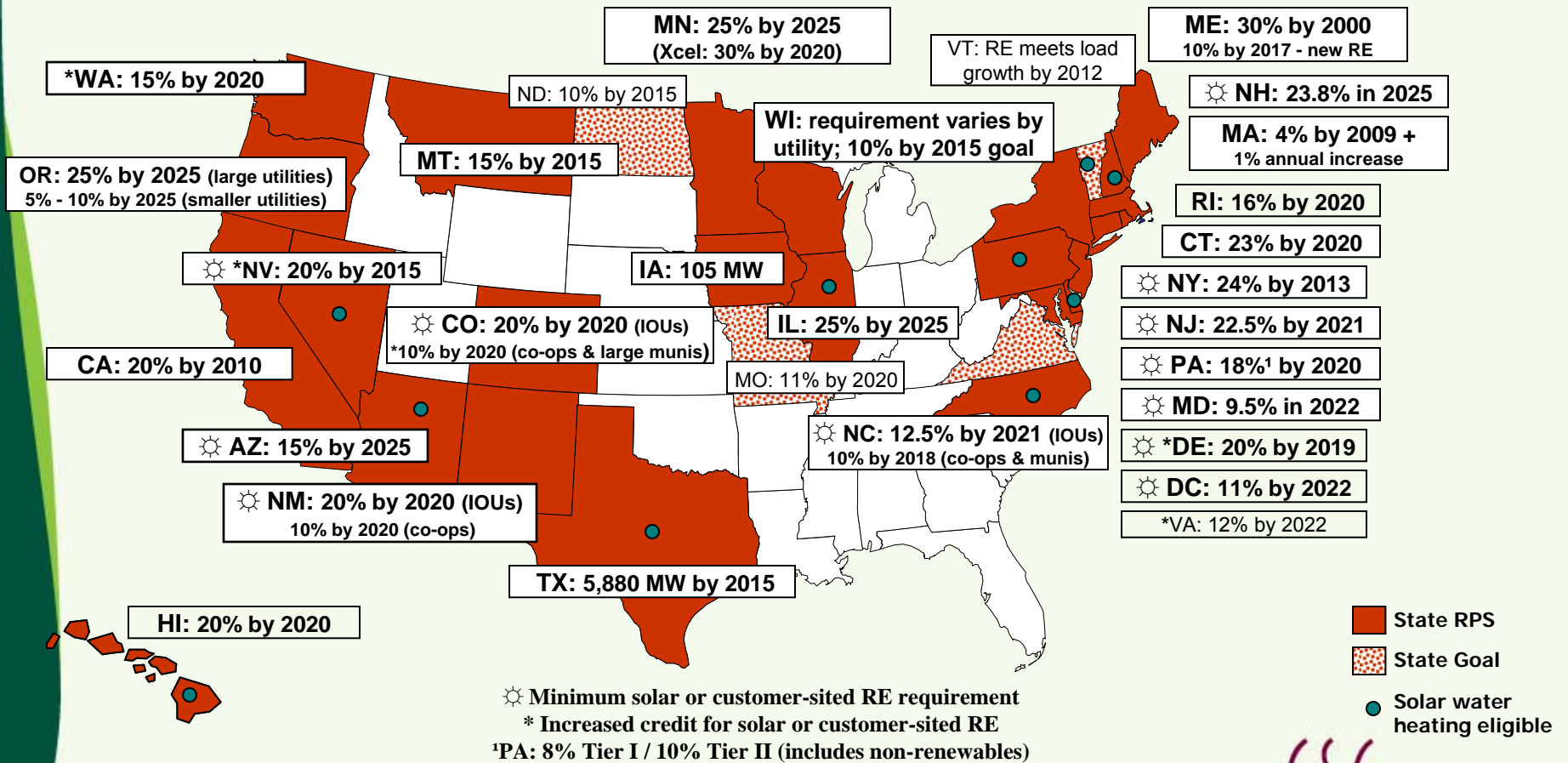


Compliance REC markets

- Who are the buyers?
- Who are the sellers?
- What are key drivers?
- Why is each state different?
- Is there money to be made?

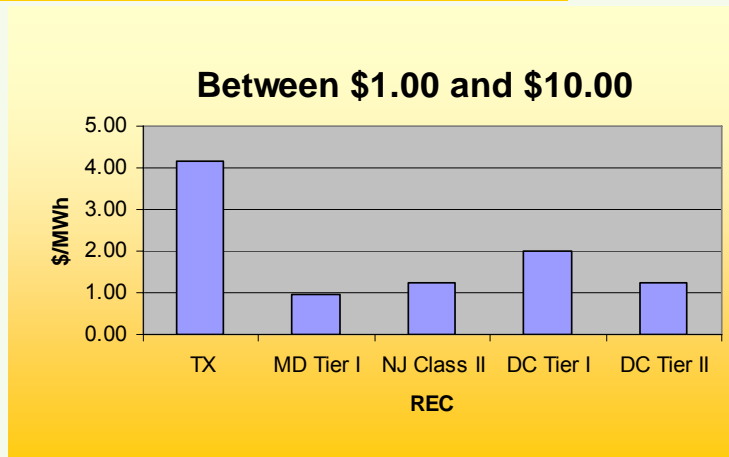
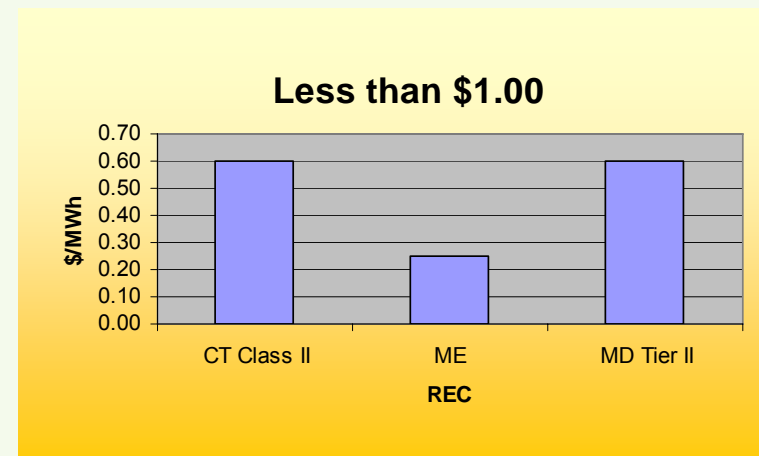
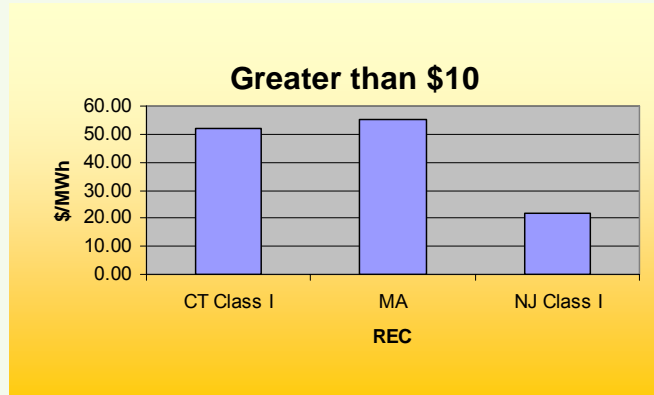


Renewable Portfolio Standards





Compliance Markets Nov. 2007





Focus on GHG Offsets

- Commodity
 - What does a GHG offset include?
 - Year that offset occurred
 - Location of project





GHG offset characteristics important to buyers

- Vintage
- Location
- Operation date
- Technology
- Additionality
- Permanence
- Qualification





Break Time!



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GHG Offset Additionality Tests

Financial test-a project is considered additional if it can prove that it requires the revenue stream from the sale of emissions credits in order to be financially feasible.

Timing test-a project is considered additional if it became operational, or was repowered, after a date when the carbon market was existent and well-known. In addition, a facility must have begun selling emissions credits within a certain number of years after becoming operational. The number of years varies based on the standard.

Regulatory test-a project is considered additional if it is not required by any government regulation.

Barriers test-a project is considered additional if it faces significant non-financial barriers to adoption.

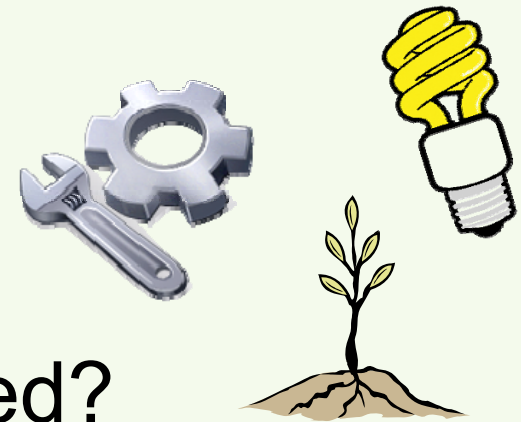
Common practice test-a project is considered additional if it goes above and beyond the norm for similar installations.

Technology test-a project is considered additional if it is in the top tier of greenhouse gas emissions rates for similar practices.



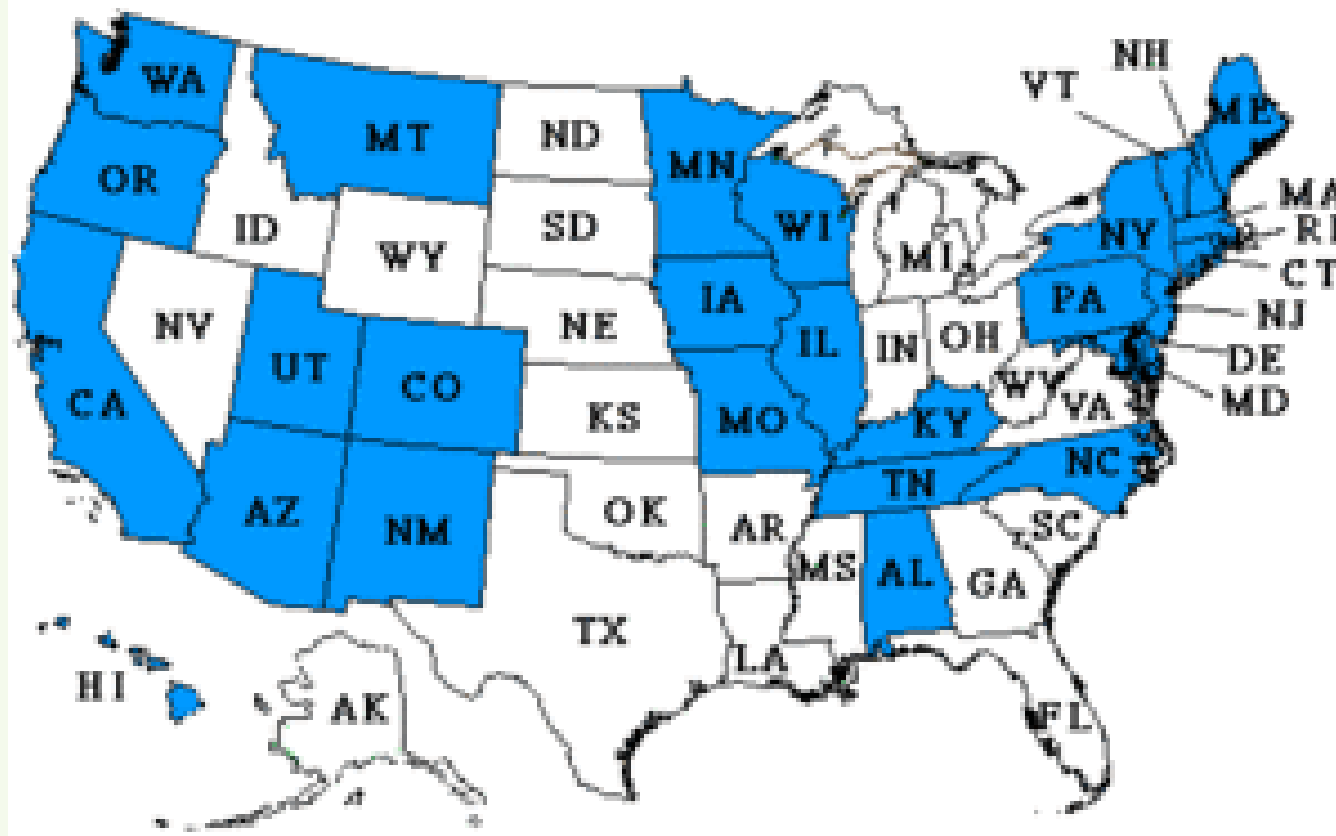
GHG offsets: What needs to be certified/verified?

- Does the project exist?
- What/how much is produced?
- Certification (qualification) \neq verification
- No double counting.





States that have declared GHG mitigation strategies or hold action plans





GHG Voluntary Standards and Registries

Voluntary Standards (a non inclusive list of examples):

- The Gold Standard
- Voluntary Carbon Standard
- EPA Climate Leaders
- Climate Neutral Network - Center for Resource Solutions (CRS)
- The Climate Trust
- Chicago Climate Exchange
- World Wildlife Fund Climate Savers
- International Standards Organization
- California Climate Standard

Registries:

- California Climate Action Registry (CCAR)
- Eastern Climate Registry (ECR) serves within RGGI
- The Gold Standard VER Registry
- Environmental Resources Trust (ERT)





Programs for GHG reductions

- Voluntary Cap & Trade:
 - DOE 1605B Program
 - Chicago Climate Exchange (CCX)
- Mandatory Cap & Trade:
 - RGGI
 - European Union Emission Trading Scheme (EU ETS)
 - AB-32





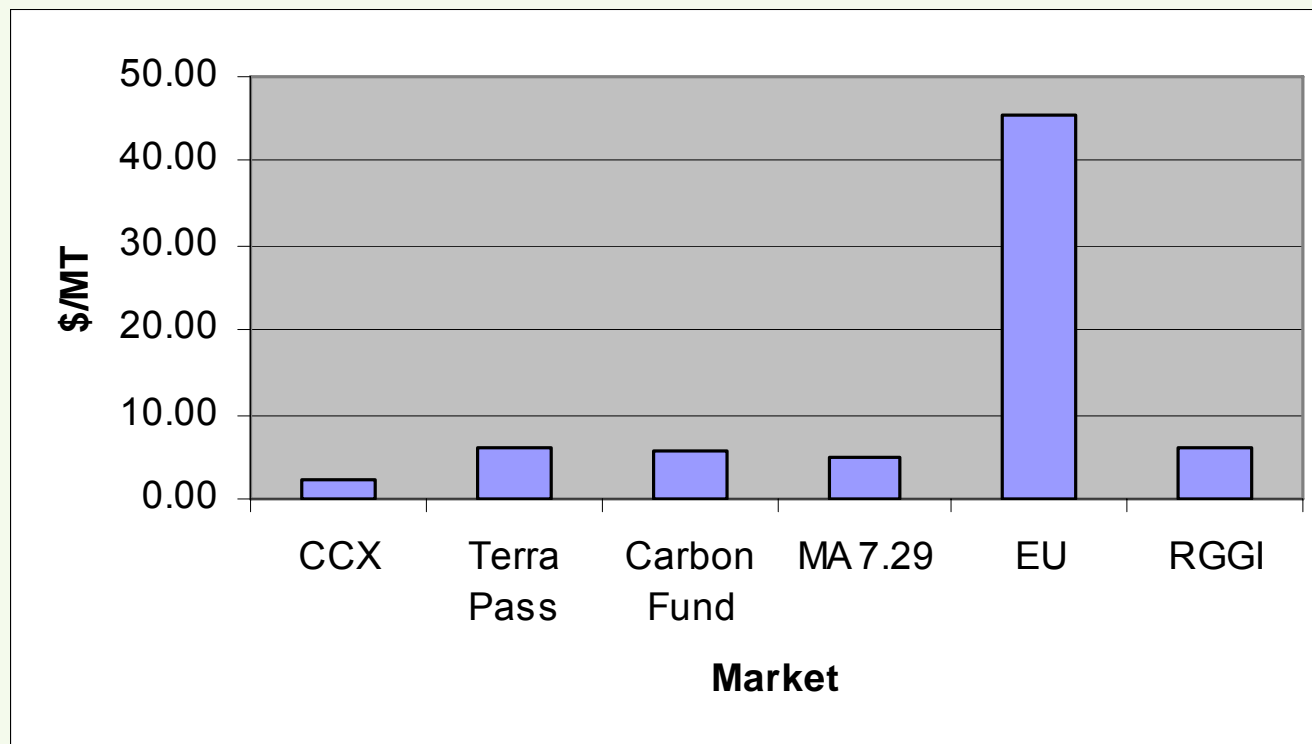
Limited voluntary GHG markets in USA

- Over the counter
- Over the counter with trades registered
- Commodities exchange (CCX)





Comparison of current carbon prices





Do markets have momentum?

- Will there be more REC and GHG markets in the future?
- Do you have an asset with value in an existing market? In a potential future market?
- Will you want to purchase assets under current market schemes? Will you have to purchase assets under proposed schemes?
- When will you know?





Current market characteristics

- Market volatility
- Low liquidity
- Regulatory uncertainty
- Buyers' requirements (price, term, description)
- Transaction cost





Where does the money go?

- Broker fees?
- Verification costs & other transaction costs?
- Improve ROI for developers of Clean Projects
- Increase profitability for Clean Projects





Ongoing issues

- Direct and indirect system attributes
- Additionality
- Cap and Trade (RECs and Auctions)
- Double-counting
- GHG offset accounting protocols
- Standard for national & international trading platform





Questions/Recap



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