



PROTECTING THE WEST'S LAND, AIR, AND WATER

Utility Decarbonization Goals

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Why Carbon?

Why should we care about carbon?

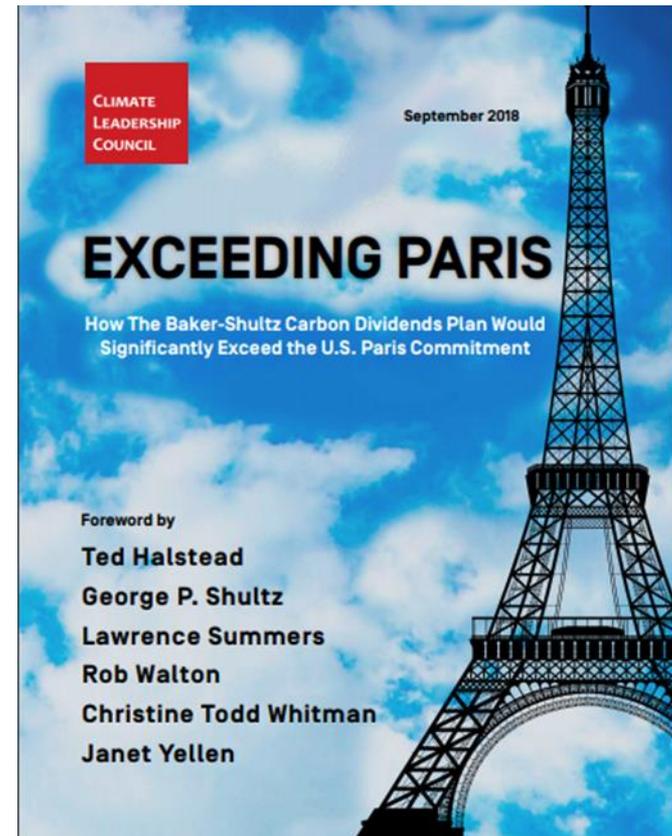
- Climate change!
- Utilities face **risk** of carbon regulation and **uncertainty** about future costs
- Carbon is correlated with other pollutants, **public health**, and environmental impacts
- Utilities may be able to **monetize** over-compliance for the benefit of customers



What's the Goal?

Science-based carbon targets

- Consistent with limiting warming to 1.5 – 2° C (Paris Agreement)
- 45 – 60% below 2005 levels by 2030 (IPCC)
- Near zero by 2050 (IPCC)



Why Price Carbon?

“Carbon pricing’ is a market-based strategy for lowering global warming emissions. The aim is to put a price on carbon emissions—an actual monetary value—so that the costs of climate impacts and the opportunities for low-carbon energy options are better reflected in our production and consumption choices.”

Market based carbon programs:

- Provide a price signal to reduce carbon
- Can facilitate the cheapest emission reductions
- Can link with other sectors and other jurisdictions
- Drive innovation



**Union of
Concerned
Scientists**

Types of Carbon Pricing

- Carbon Tax
 - “Laws or regulations are enacted that establish a fee per ton of carbon emissions from a sector or the whole economy.”
 - Sets price on emissions (not level or cap)
- Cap and Trade
 - “Laws or regulations would limit or ‘cap’ carbon emissions from particular sectors of the economy (or the whole economy) and issue allowances (or permits to emit carbon) to match the cap.”
 - Sets level of emissions (not price)



Types of Carbon Pricing Cont.

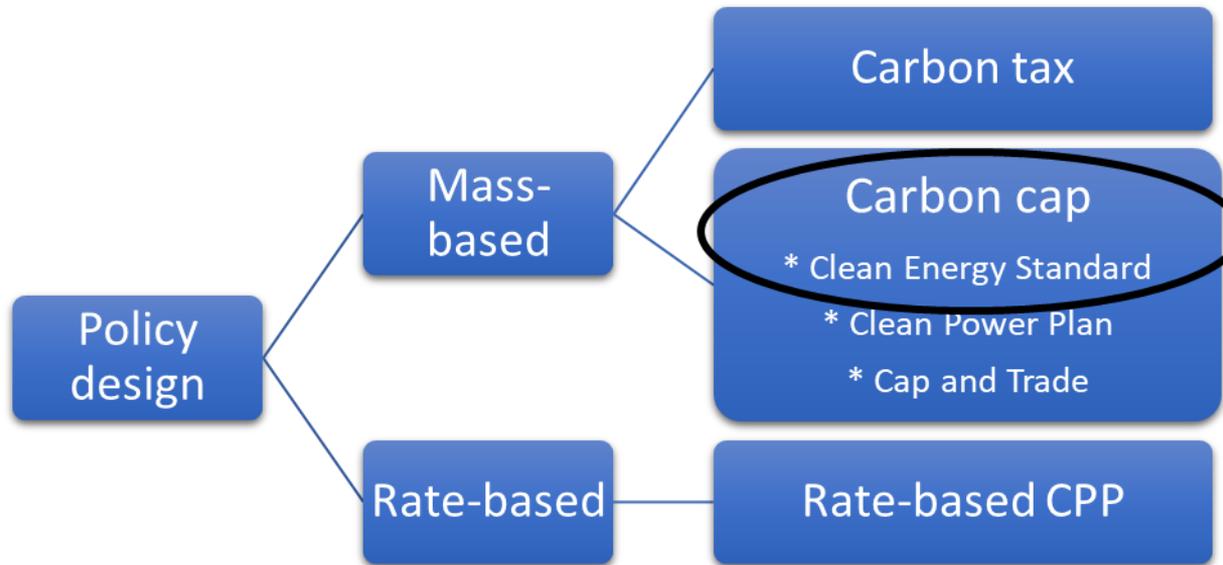
- Hybrids
 - “Limit carbon emissions but set bounds on how much the price can vary (to prevent prices from dropping too low or rising too high); adjusts the tax to ensure specific emission reduction goals are met; a jurisdiction implements a carbon cap-and trade program for some sectors and applies a carbon tax on others.”
- Clean Energy Standard (CES)
 - Electric utilities *reduce CO₂ emissions* from their generation fleet - *technology neutral*
 - CO₂ credits are earned, not allocated or auctioned
 - Administered by utility commissions
 - Preserves traditional utility regulatory structure

Clean Energy Standard (CES)

The CES is a load-based, mass-based regulation

	Rate-based	Mass-based
Load-Based (typical utility regulation, overseen by a commission)	<ul style="list-style-type: none"> Renewable Energy or Energy Efficiency Standards 	<ul style="list-style-type: none"> Clean Energy Standard
Source-Based (typical air regulation, overseen by air regulators – e.g. ADEQ)	<ul style="list-style-type: none"> Rate-based Clean Power Plan (CPP) 	<ul style="list-style-type: none"> Cap & trade <ul style="list-style-type: none"> CO₂ tax Mass-based CPP

CES Policy Design



A rule implemented at the ACC would

- Exclude some fossil plants in AZ
- Include plants outside of the state that serve AZ customers
- Reward clean energy generators **servicing AZ customers**, regardless of their location

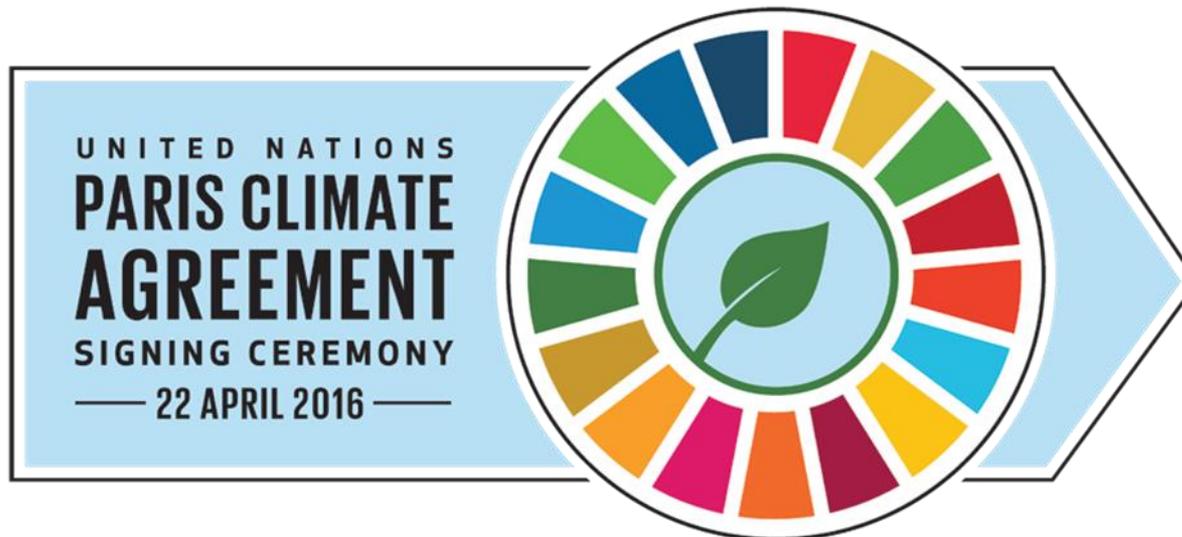
CES Mechanics

1. Establish baseline annual CO₂ emissions and reductions
2. Award clean energy credits (CECs)
3. Retire CECs for compliance



Establish Baseline

- Establish the utility's annual emissions from a recent year or average of several years (e.g., 2016-2018 ave = 10.4 mil tonnes/yr)
- Select a “normal” period (e.g. no major outages)
- Based on generation “dedicated” to serve a utility's customers
- Reduction stringency should satisfy climate goals and enable trading (e.g. 80% reduction by 2040... 4%/yr from 2020 -2040)



Award Credits

- Generators earn credits (CECs) for CO₂ less than 1000 tonnes/GWh (older coal plant)
- For every GWh produced:
 - CECs awarded = 1000 – CO₂ Emissions

Examples:

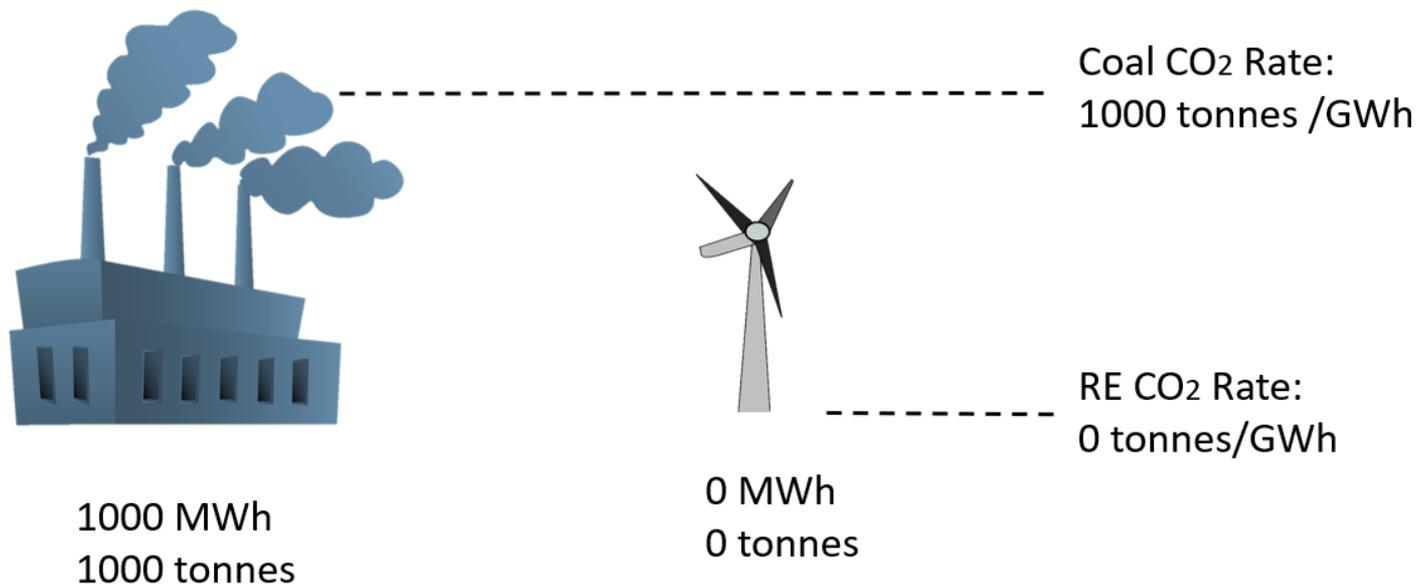
- 1) 1 GWh solar gets 1000 credits (1000 – 0 tonnes)
- 2) 1 GWh gas gets 600 credits (1000 – 400 tonnes)
- 3) 1 GWh coal gets 0 credits (1000 – 1000 tonnes)



Retire Credits

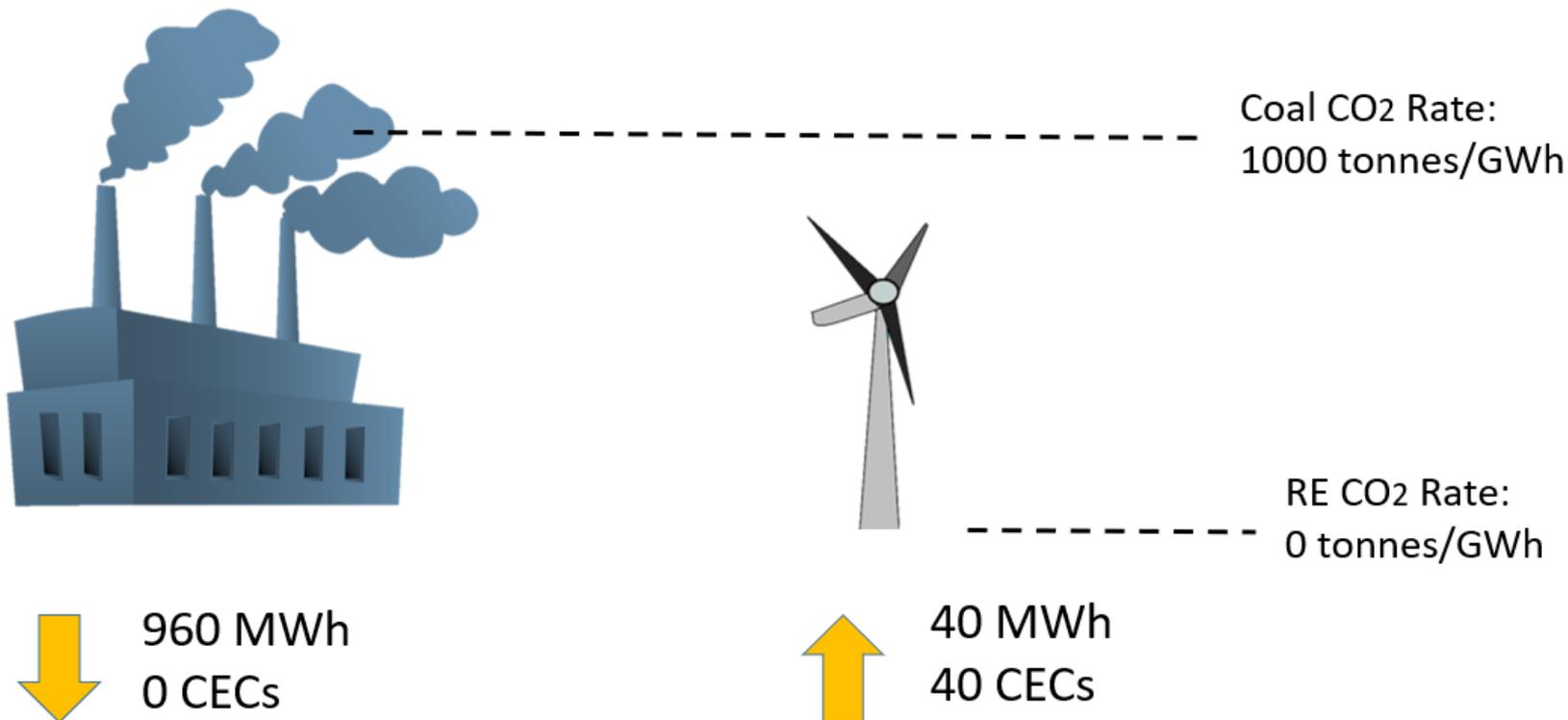
CECs never expire, and can be traded, sold, or banked

Example – baseline before any action:



Retire Credits Cont.

Example: after actions to reduce emissions 60 tonnes, or 4%:



Retire Credits Cont.

What is the emission outcome?

- Before action: Coal = 1000 tonnes
RE = 0 tonnes
Total = 1000 tonnes
- After action : Coal = 960 tonnes
RE = 0 tonnes
Total = 960 tonnes (4% reduction)

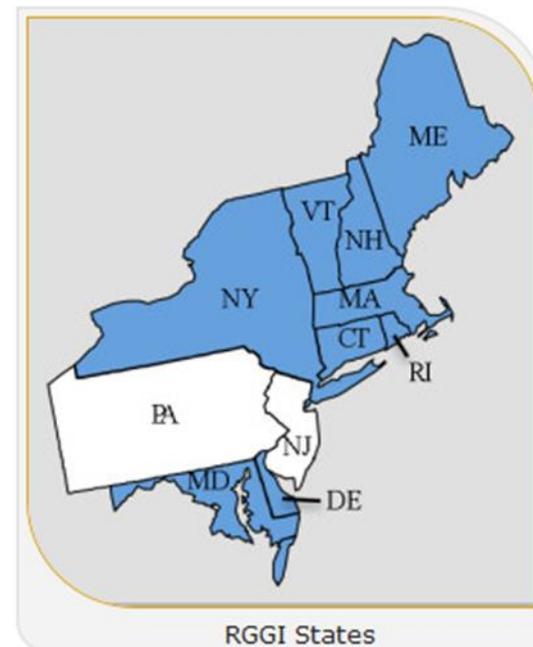
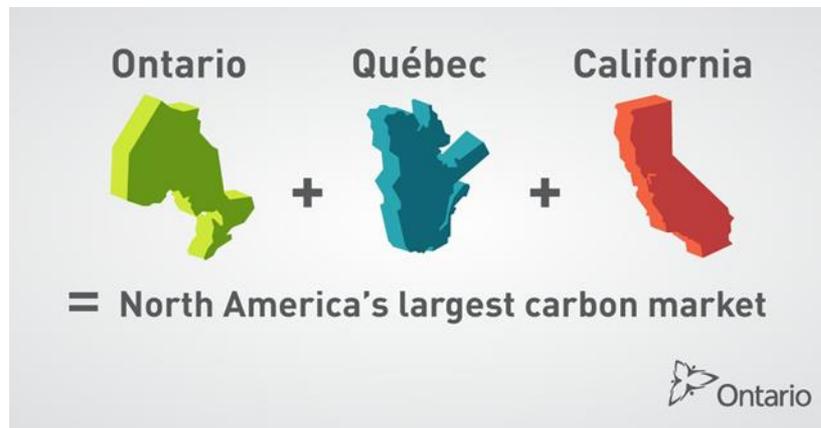


Can CES Link to Other Markets?

Yes!

Two components to linkage:

1. Common currency (i.e. 1 tonne of CO₂)
2. Similar stringency (i.e. 4% reduction per year)



CES Summary

A clean energy standard would

- Manage risk of future CO2 and other pollutant regulation
- Document, certify and quantify utility emission reductions
- Allow market to drive the most economic, technology-neutral, reductions
- Afford regulatory certainty and assure emission reductions
- Provide opportunity for \$\$ benefit from over-compliance
- Protect the environment and address climate change

And it is

- Simple, transparent, and achievable
- Different than cap & trade, because credits are earned, there is no allocation or auction

Recommendations

- TEP should set a 100% zero carbon goal by mid-century or sooner
- TEP should set an interim carbon reduction goal of at least 45% by 2030
- TEP should look at a market-based approach, such as CES



Questions?

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