



# Doylestown Climate Action Planning

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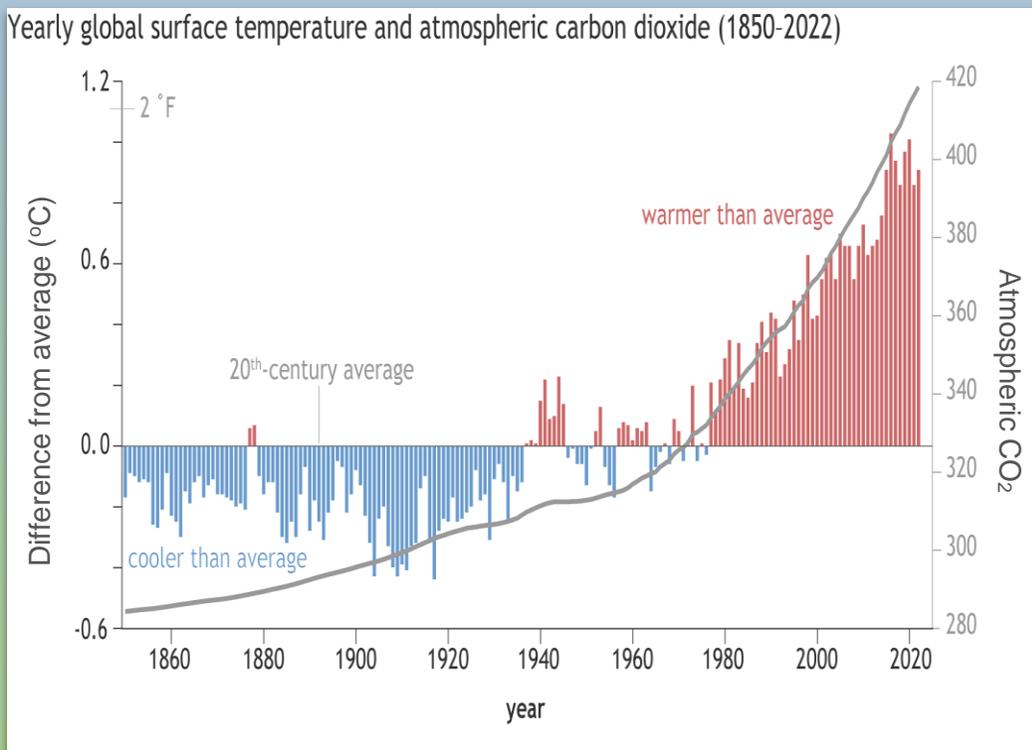




# Context for Climate Action Planning



## The Evidence



[National Oceanic & Atmospheric Administration \(NOAA\)](#)

## The Positive Impact



[New Climate Economy](#)



# Background



The Doylestown Township Environmental Advisory Council (EAC) is developing a Township Climate Action Plan

- Roadmap to achieve Township's climate goals
- To be adopted by Board of Supervisors
- Target completion - 2Q, 2024

## Today's Objectives:

- **Share our process & progress**
- **Get your input**

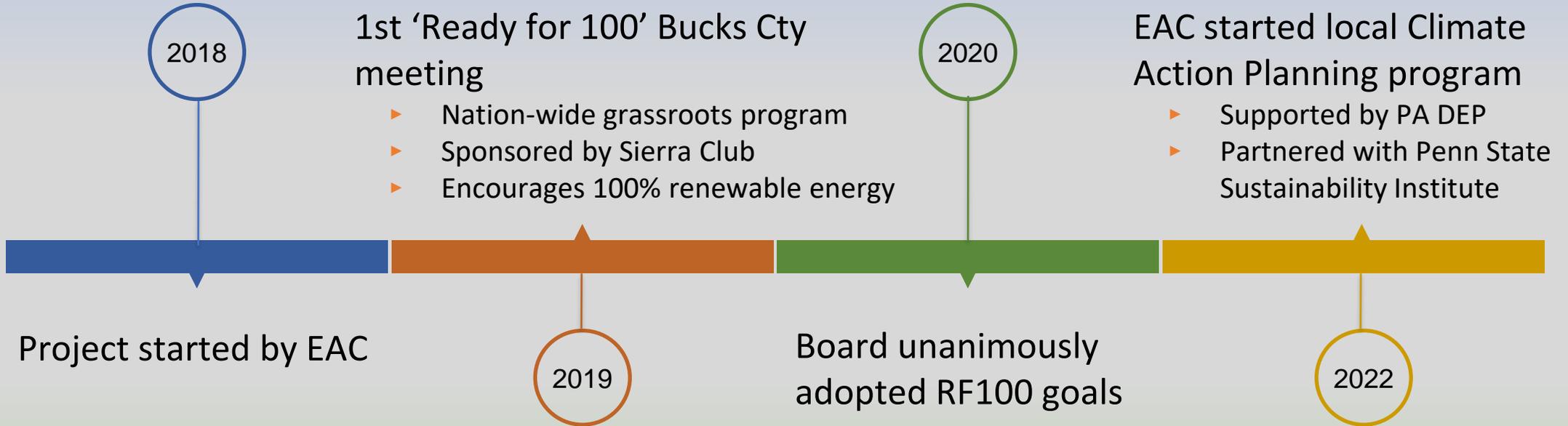
What are you most interested in hearing about?



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# Our Journey



## Goals

- 100% renewable electricity by 2035
- 100% renewable energy for all uses by 2050





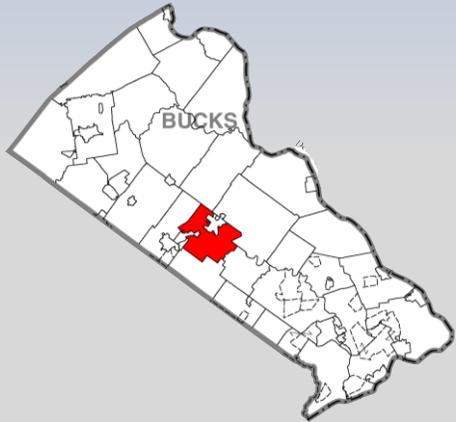
# Climate Action Planning (CAP) Steps



- 1 Set goal
- 2 Understand community
- 3 Create baseline greenhouse gas inventory
- 4 Brainstorm potential climate actions
- 5 Model impact on future GHG\* emissions
- 6 Refine and ratify with community input
- 7 Secure Board of Supervisors adoption
- 8 Execute CAP and monitor results



# Doylestown Township Quick Facts



## Attributes

- Largely suburban (Borough is “urban”)
- Residential - Single family homes on larger lots
- Commercial - offices, shopping centers, car dealerships, health care

## Demographics

**17,941**

Population

**89.6%**

Race (white)

**57.7%**

College Educated

**22.6%**

> 65 yrs old

**6,203**

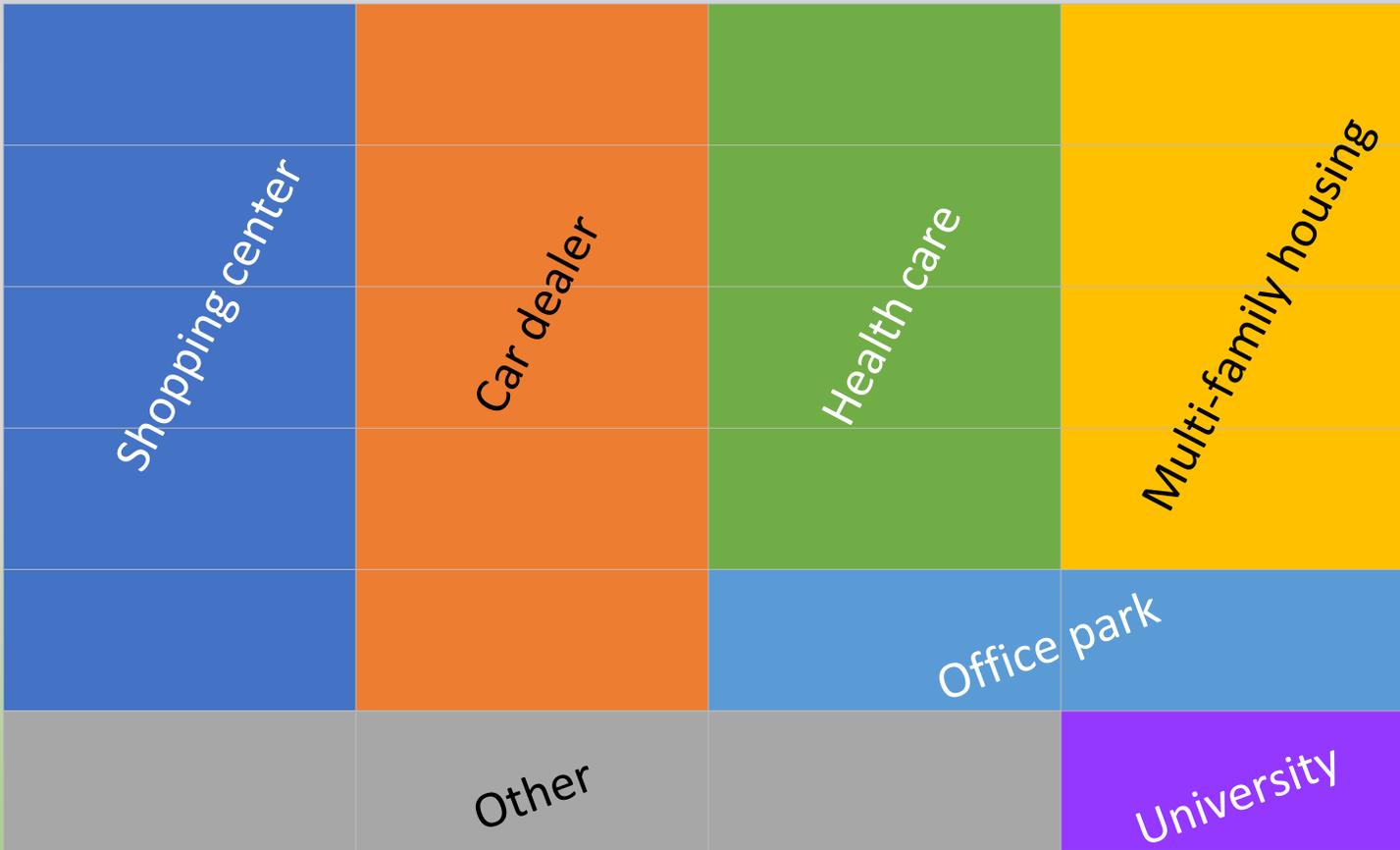
Households

**3.9%**

Poverty



# Top Energy Users





# Brainstormed Potential Actions



- Collaborated with Doylestown Borough
  - ▶ Explored joint actions, given proximity
  - ▶ Aimed to coordinate & simplify
- Evaluated for impact & feasibility

## Areas Considered

- |  |   |
|--|---|
|  Transportation     |  Consumer behavior     |
|  Residential energy |  Electrical grid       |
|  Commercial energy  |  Water and wastewater |
|  Solid waste      |  Agriculture         |

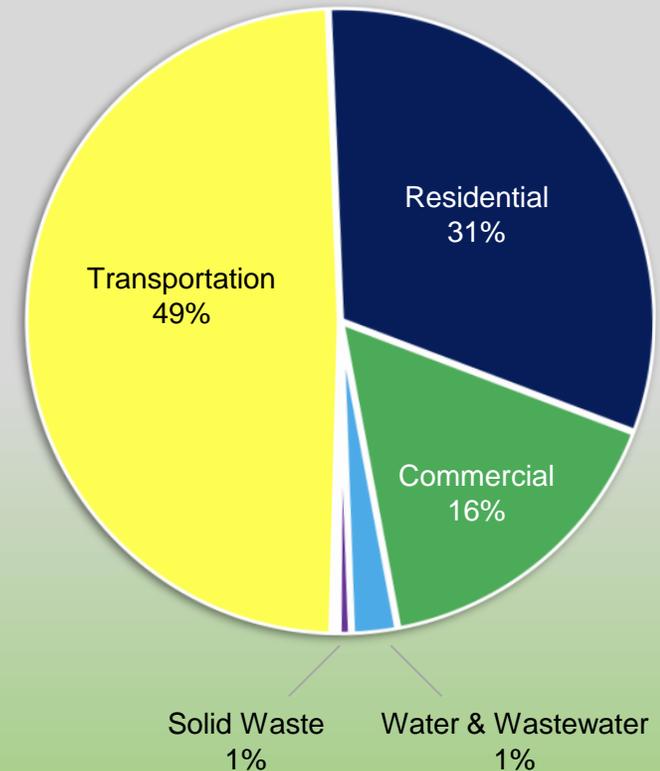


# Baseline Greenhouse Gas (GHG) Inventory



- Transportation is major driver
  - ▶ Mostly on-road transportation fuel use
  - ▶ Little off-road use (except lawn & garden)
- Commercial
  - ▶ Mostly office & shopping center
  - ▶ No heavy industry
- Residential & commercial
  - ▶ More nuclear than national average
- Developed with Penn State & PA DEP using ICLEI<sup>1</sup> ClearPath model

2019 **Baseline**  $\approx$  **160,000** mtCO<sub>2</sub>e<sup>2</sup>  
( $\approx$  35,000 passenger vehicles driven for 1 year)





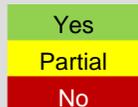
# Evaluating Actions: Transportation



Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
EVs	Chargers	Building codes	No	Partial	Yes	No
		Subdv. ordinance	Yes	No	Yes	Yes
		Fin. incentives	Yes	Partial	Yes	Partial
		Municipal locations	Yes	Yes	Yes	Yes
		Work places	No	Partial	Yes	No
	Education		Yes	Partial	Yes	Yes
	Direct fin. incentives		Yes	Yes	Yes	No
Congestion mitigation		Traffic light timing	Partial	No	Partial	Partial
		Traffic circles	Yes	No	Yes	No
		Park and ride	Partial	No	Yes	Partial
Mass transit			Yes	No	Yes	No
Biking/walking/e-biking			Yes	No	Yes	Partial
Ridesharing			No	Partial	Yes	No
Telepresence			No	No	Yes	No
Heavy trucks	EVs/low em ission fuels		No	Yes	Partial	No
Light aircraft	EVs/low em ission fuels		No	Partial	Yes	No
Off road/lawn & garden	Electrification		Yes	Partial	Yes	Yes
		Reduction in lawns	Partial	Partial	Yes	Partial
		Electric golf carts	Yes	Yes	Yes	Yes
		Construction equip.	No	Partial	Yes	Partial
	Low em issions		No	Partial	Yes	Partial

## Legend

**Control** - within our power to implement  
**Impact** - has material effect on emissions  
**Applicability** - relevant to Township  
**Feasibility** - "do-able"





# Evaluating Actions: Buildings



## Residential

Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
Reduced building energy		Education/audits	Yes	Partial	Yes	Yes
		Building codes	No	Yes	Yes	Partial
		Fin. Incentives	Yes	Partial	Yes	Partial
Rooftop solar			Partial	Yes	Yes	Yes
Community solar			No	Yes	Yes	No
Construction materials			No	Partial	Yes	Partial
Home electrification	Heat pumps/induction		Partial	Yes	Yes	Partial

## Commercial

Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
Reduced building energy		Education/audits	Yes	Partial	Yes	Yes
		Building codes	No	Yes	Yes	Partial
		Fin. Incentives	Yes	Partial	Yes	Partial
Rooftop solar			Partial	Yes	Yes	Yes
Community solar			No	Yes	Yes	No
Construction materials			No	Partial	Yes	Partial
Electrification	Heat pumps/induction		Partial	Yes	Yes	Partial

### Legend

- Control** - within our power to implement
- Impact** - has material effect on emissions
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# Evaluating Actions: Waste & Water



## Solid Waste

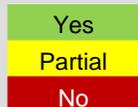
Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
Reduction	Consumer behavior	Education	Yes	Partial	Yes	Yes
		Tax	Partial	Partial	Yes	Yes
Reduction of methane	Diversion	Recycling/composting	Partial	Partial	Yes	Partial
		Composting	Partial	Partial	Yes	Partial
		Co-generation	Partial	Partial	Yes	Partial
		Capture	Partial	Partial	Yes	Partial

## Water & Wastewater

Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
Wastewater	Water treatment	Hydrochar	No	Partial	Yes	Partial
	Water use reduction		Partial	Partial	Yes	Partial
Septic systems		Mun. water and sewer	Yes	Partial	Yes	Partial
Water pumping		Solar power	Partial	Partial	Yes	Partial
		Loss reduction	Partial	Partial	Yes	Partial

### Legend

- Control** - within our power to implement
- Impact** - has material effect on emissions
- Applicability** - relevant to Township
- Feasibility** - "do-able"





# Evaluating Actions: Grid & Agriculture



## Grid

Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
Carbon-free electricity		Utility regulation	Yes	Yes	Yes	Yes

## Agriculture

Category	Sub-category	Action	Control	Impact	Applicability	Feasibility
Cow methane reduction			Yes	Partial	Yes	Yes
Consumer diet			Partial	Partial	Yes	Yes
Land use			Yes	Partial	Yes	Yes
Regenerative agriculture			Yes	Partial	Yes	Yes

### Legend

- Control** - within our power to implement
- Impact** - has material effect on emissions
- Applicability** - relevant to Township
- Feasibility** - "do-able"

Yes
Partial
No



# Evaluating Actions: Summary



## Top Actions



### EVs

- ▶ Financial incentives
- ▶ Municipal chargers



### Off-road electrification



### Education

- ▶ Building energy
- ▶ Waste reduction



### Rooftop solar



### Waste - tax incentives

## Criteria

- Control** - it's within our power to implement
- Impact** - has a material impact on emissions
- Applicability** - relevant to the Township
- Feasibility** - "do-able"

Which action area are you most interested in?



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# Modeling: Introduction

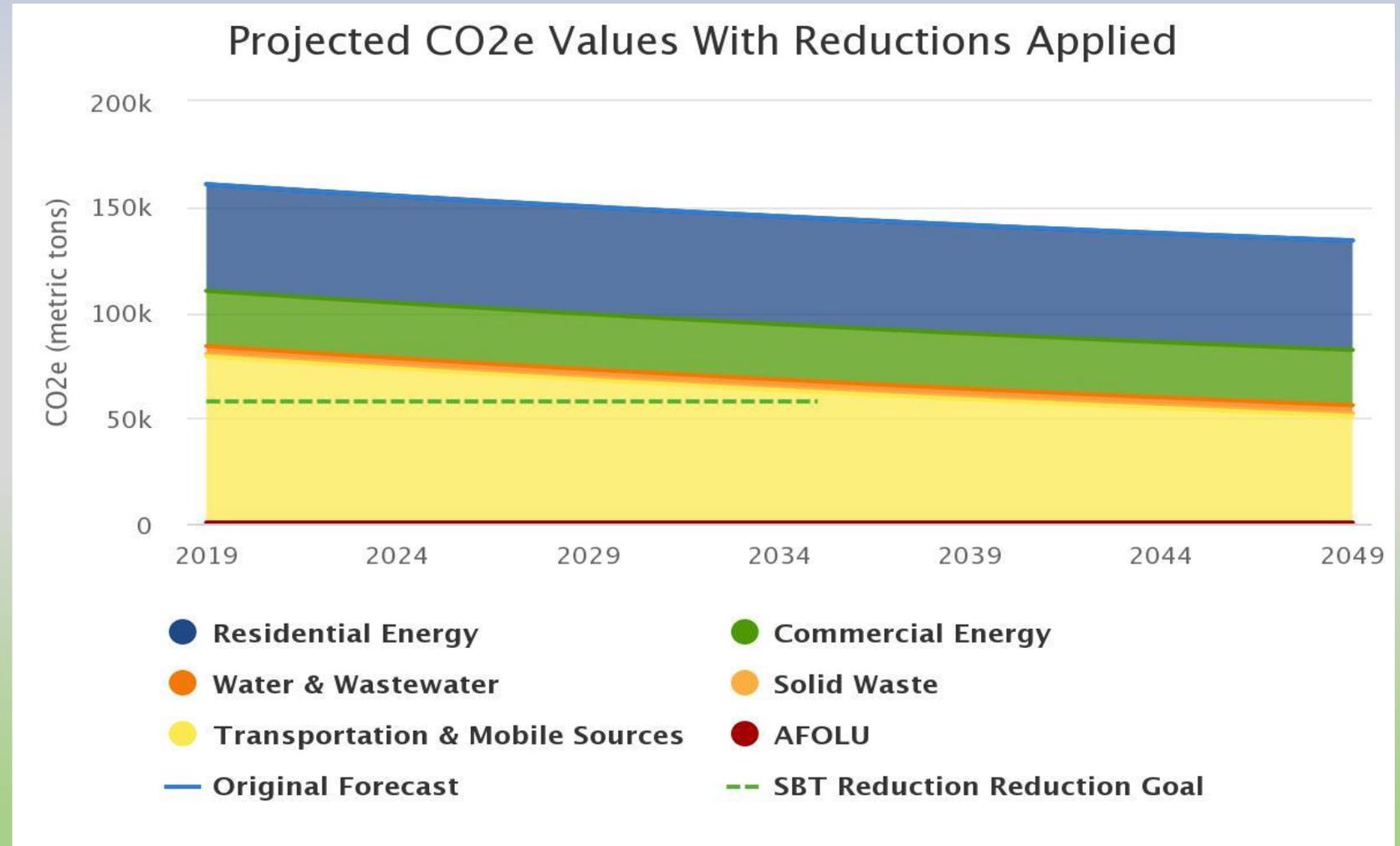


- Projected future GHG emissions using ClearPath model
  - ▶ Baseline = 2019
  - ▶ Modeling horizon = 2050
- Considered effects outside direct local control
  - ▶ Limited ability to impact locally
  - ▶ Trends in market, federal/state incentives & directives
- Started to assess gap to be closed



# Modeling: Baseline

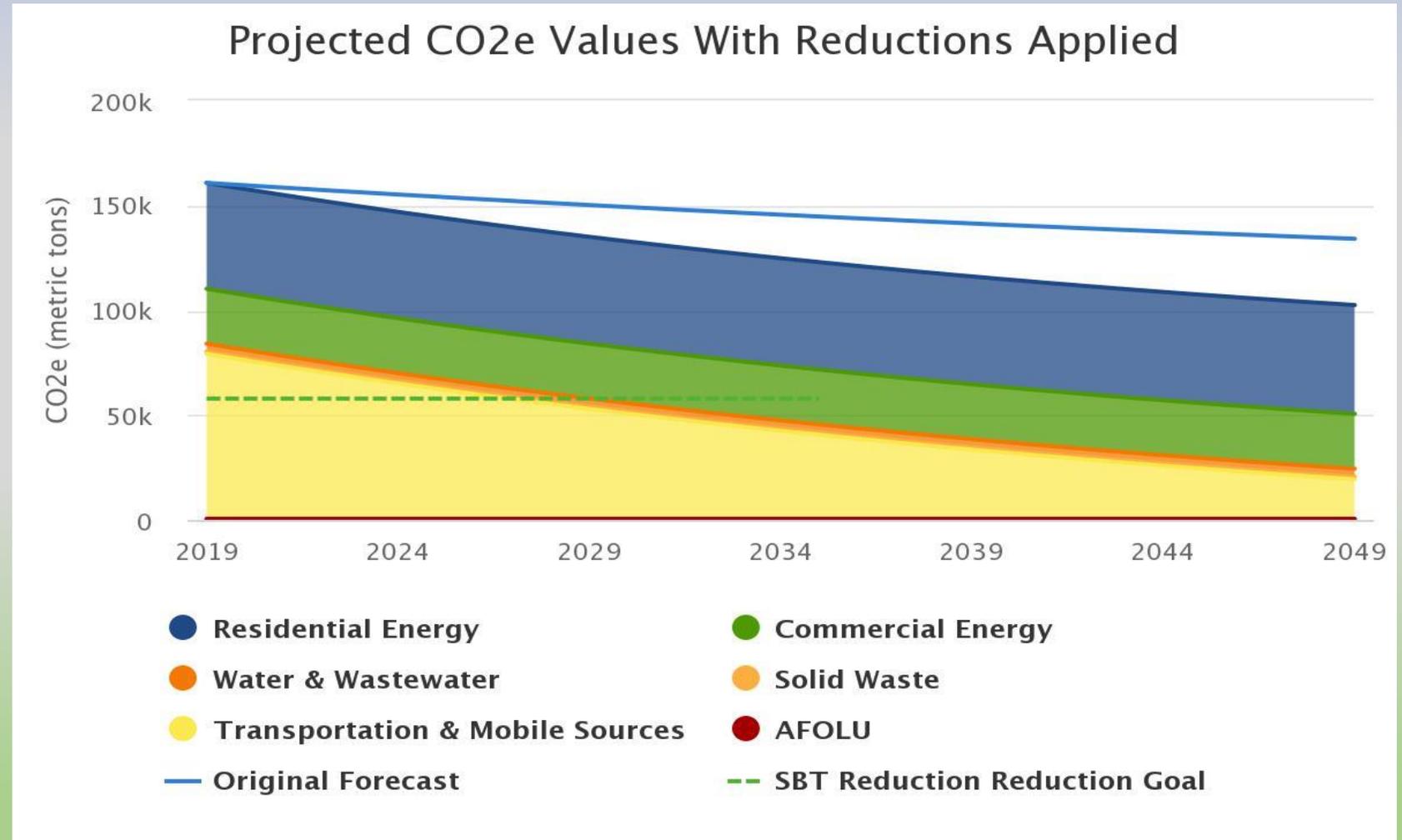
- Model of existing fuel economy standards for cars & light trucks





# Modeling: EV Adoption

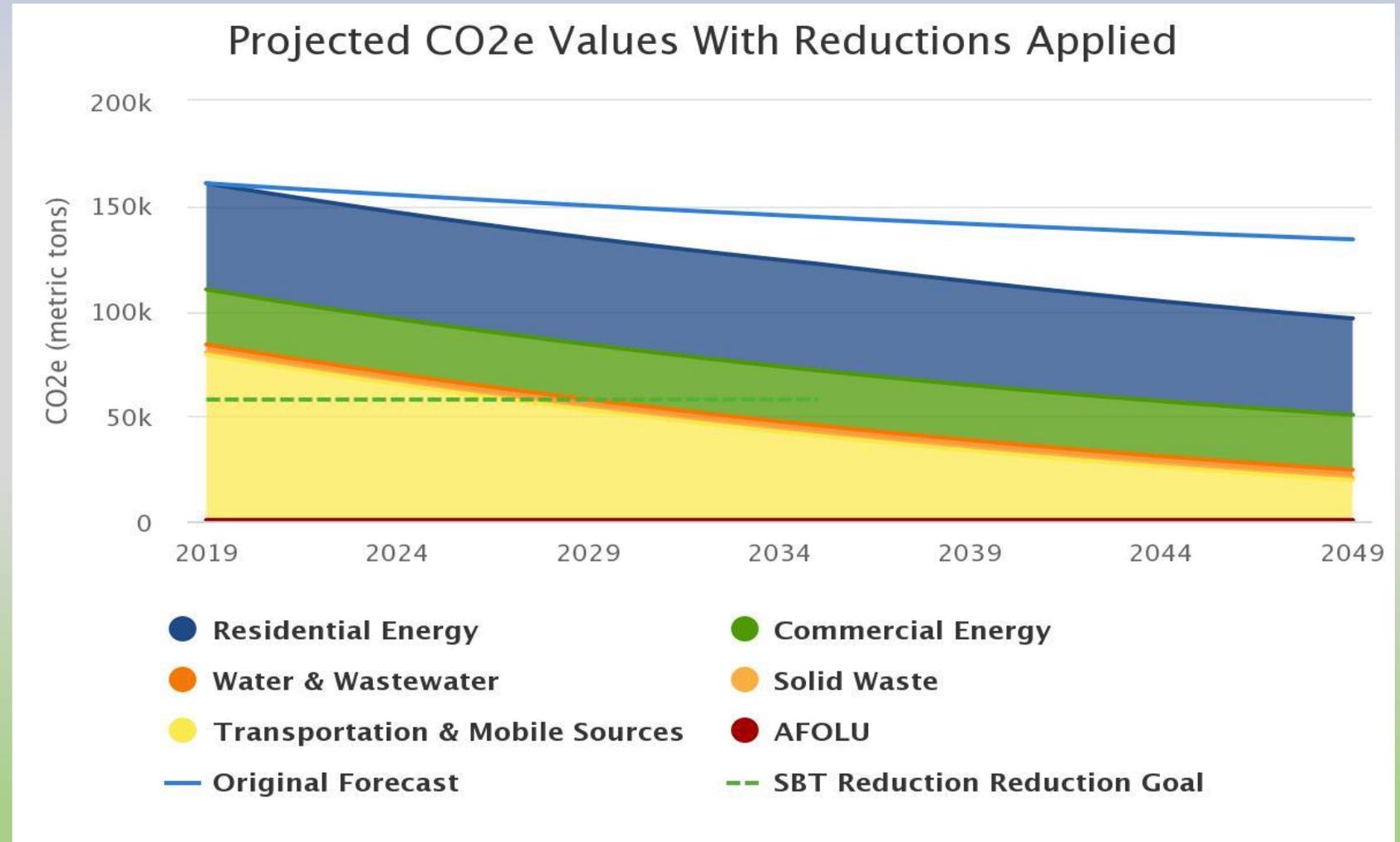
- Ratable increase in EV penetration to 65% of car & light truck fleet by 2050





# Modeling: Residential Solar

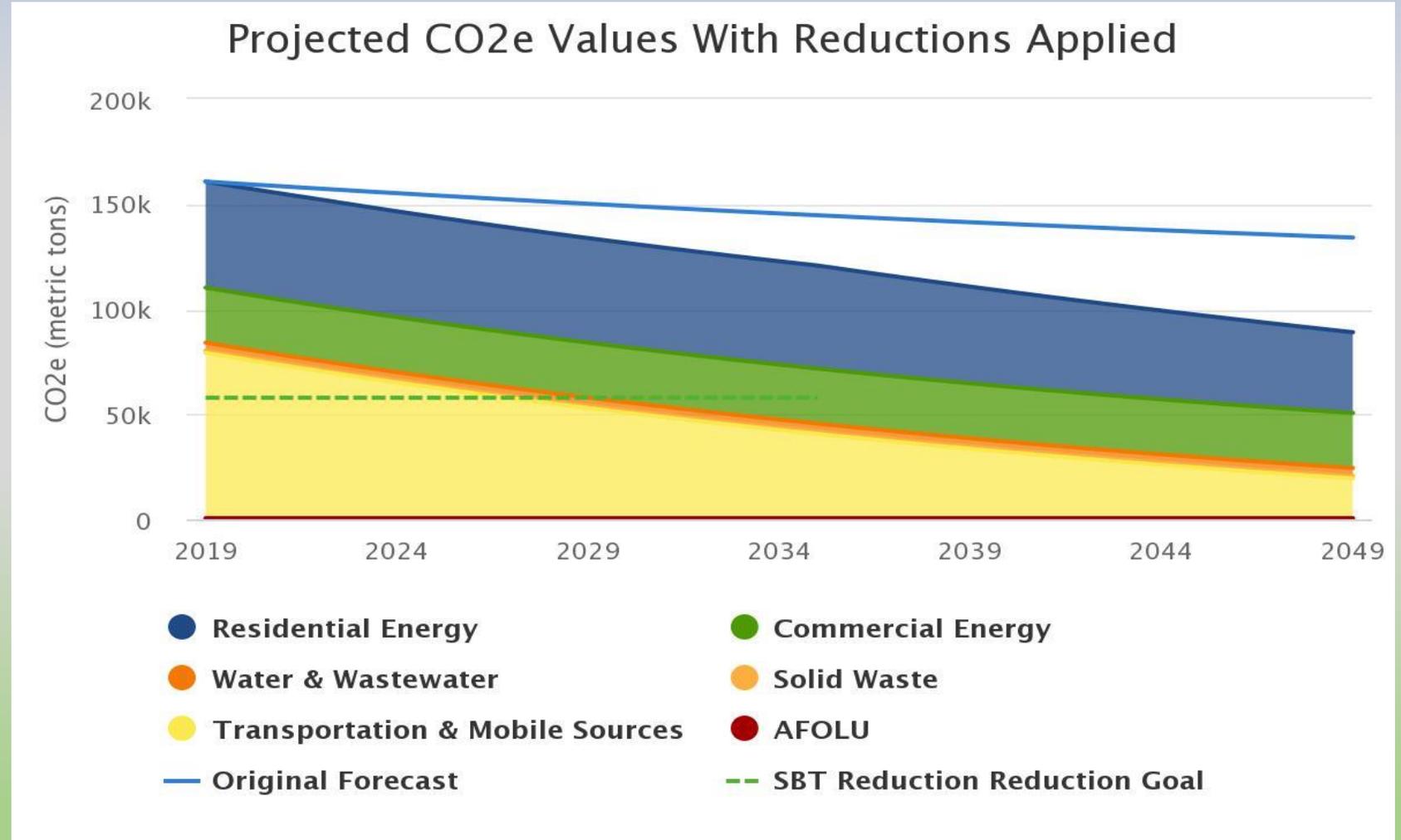
- Installation of 100KW/year 2023-2035, 1000KW/year 2036-2050





# Modeling: Residential Heat Pumps

- Boiler replacements at 5% / year
  - 20% by 2023-2035
  - 75% by 2036-2050

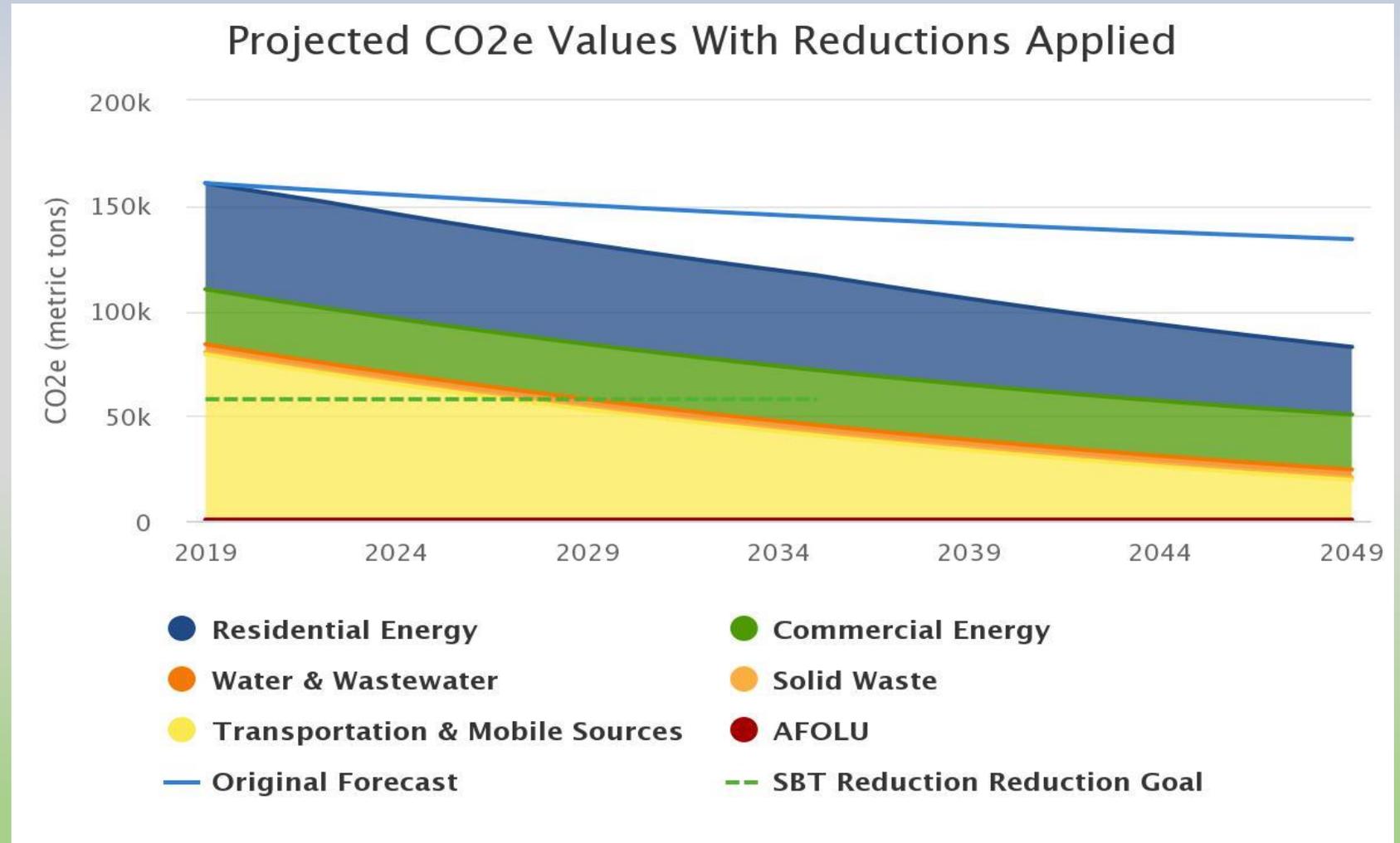




# Modeling: Residential Energy Education



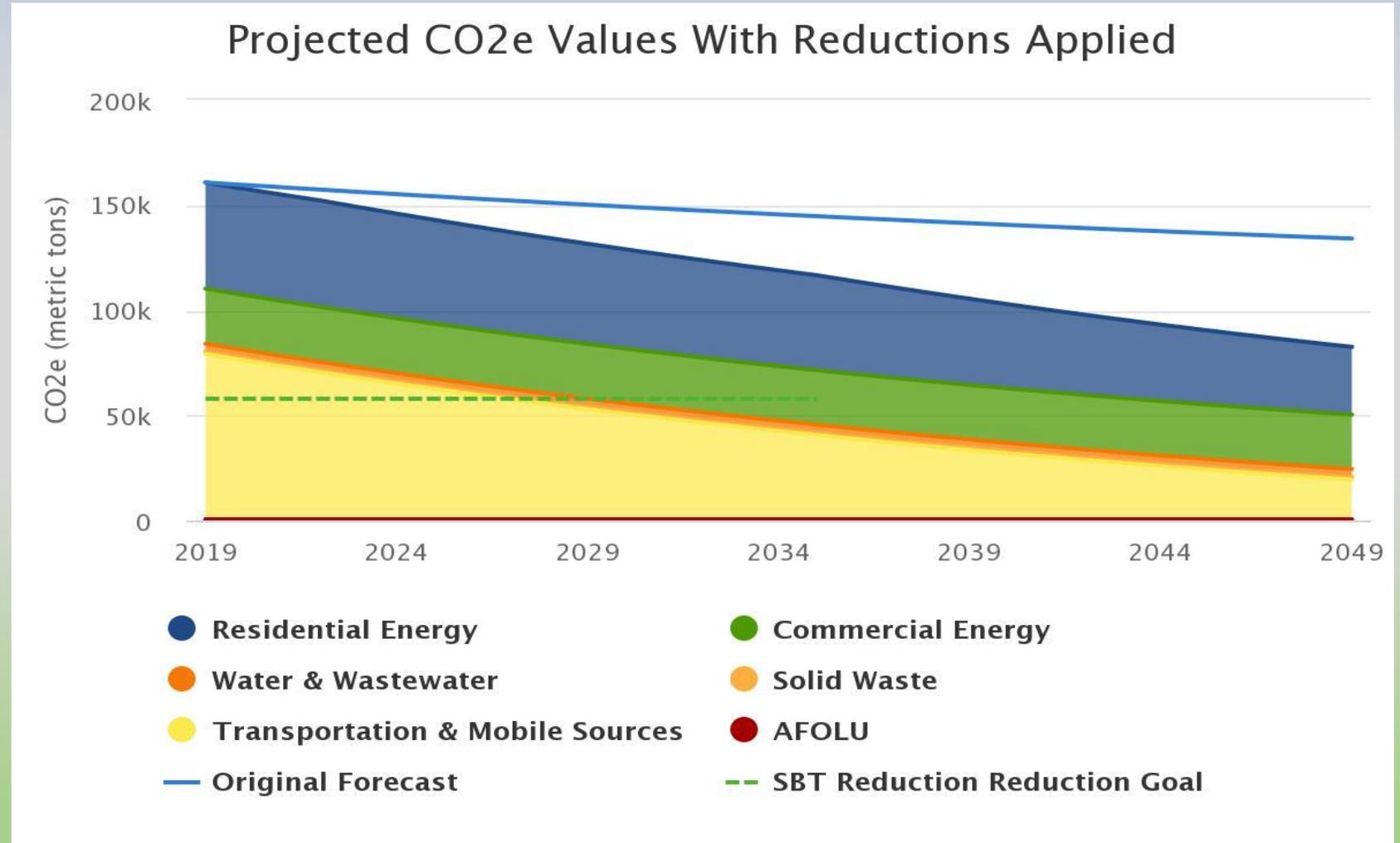
- Reach 10% of households each year





# Modeling: Commercial Solar

- 50 KW of installed capacity/year – 2023-2035





# Issues to Address



## Landlord/tenant problem

- Mis-aligned incentives
- Landlords own buildings but tenants pay bills
- Landlords can't justify PV solar/energy improvements
- **AIM:** *Align incentives for PV solar/energy to be profitable to all*

## Community solar

- Allows participation by properties in a collective installation
- ~Half of housing stock suited to PV solar
- Currently not allowed by PA law
- **AIM:** *Support Community Solar & explore Virtual Meter Aggregation*



# Primary Goals of Community Engagement



## Refine Plans

- Enroll local experts
- Tailor actions to real-world situations
- Connect experts with business people

## Develop Support

- Provide accurate information to clarify “myths”
- Address perception of false tradeoffs between clean energy & economic activity



# Key Takeaways: Co-benefits



## Reducing carbon is not like “eating your spinach”!

- There are huge co-benefits
  - ▶ Healthier air & water
  - ▶ Good green-industry jobs
  - ▶ Economic savings
  - ▶ More comfortable homes
  - ▶ Less noise pollution

Pollution from operating two-stroke leaf blower for 30 minutes



=



Driving a Camry 1,100 miles



# Key Takeaways: Talk & Act



## Talk with friends & neighbors!

- Individual actions are necessary but not sufficient
  - ▶ Buying LED bulbs & caulking windows won't achieve zero emissions
- We'll actively influence behavior & encourage "green" practices
  - ▶ **You play a key role**

**75%\***

Americans support climate change mitigation

vs.

**40%\***

Peoples' estimate of their peers' degree of support



# Key Takeaways: Influence Officials



## You can influence our elected officials!

- Many actions aren't within our control
  - ▶ “Greening” the grid
  - ▶ Changing building codes for energy efficiency
  - ▶ Converting to carbon-free transportation
- The State is needed to execute essential broad actions



# Our Next Steps



- Continue getting community input
- Refine & ratify potential actions
- Secure Board of Supervisors Climate Action Plan adoption
- Execute CAP, monitor results & adjust



**Prediction is very  
difficult, especially  
if it's about the  
future.**

**Niels Bohr**



# Questions & Comments



What questions or comments do you have?



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