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**MEETING MINUTES OF THE VIRTUAL  
ARLINGTON COUNTY C2E2 ENERGY COMMITTEE**

9/7/2022

The **C2E2 ENERGY COMMITTEE** convened its hybrid meeting at **7:00 PM** on **September 7, 2022**.

**PRESENT (IN-PERSON)**

Scott Sklar  
Scott Brideau  
Stephanie Burns  
Gregg Brozak  
Scott Dicke  
Stephanie Gagnon  
Claire Noakes  
Kip Malinosky  
John Bloom  
Doug Snoeyenbos

**PRESENT (VIRTUALLY)**

Rick Keller, participated virtually from home (via Teams)  
Vince Plaxico, participated virtually from home (via Teams)  
Vasu Nambeesan, participated virtually from home (via Teams)  
Tim Effio, participated virtually from Massachusetts (via Teams)  
Jonathan Morgenstein, participated virtually from home (via Teams)

**ABSENT**

Kevin Vincent

**STAFF**

Rich Dooley  
Demetra McBride  
Rebecca Moser  
Steve Burr  
Charles Njoku  
Christie Amero (Cadmus consultant under contract with Arlington)

**PUBLIC**

Jasmine Mah, Andrew Etheridge, Eric Gibbs

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**SUMMARY OF PRESENTATIONS/DISCUSSIONS**

**1. Greetings and introductions (7:00)**

- Tim Effio welcomed everyone and thanked everyone for joining the meeting.
- The agenda, items 6 & 7, will be more of an internal discussion as opposed to asking for external speakers to present to us tonight. We aim to have external speakers next month if the items are deemed to be important enough.

## 2. Review/approve agenda and July meeting summary (7:05)

- The September meeting agenda was approved. The July meeting summary, after an edit was made per John Bloom's request, was also approved.
- Jonathan Morgenstein asked whether virtual EC members could vote during hybrid EC meetings. Staff at the time thought the answer was "no." **However, after the meeting, staff consulted with the Arlington County Attorney's Office (CAO). The CAO noted that both in-person and virtual EC members participating in hybrid EC meetings can vote during EC hybrid meetings.**

## 3. Public Comment on General Topics (7:10)

- Andrew Etheridge (new Arlington resident from MA; was a member of [350 Central Mass](#)) and Jasmine Mah (new Arlington resident; she works on energy matters at [ACEEE](#)) joined us. Both Andrew and Jasmine are interested in getting involved in the Arlington community.
- Andrew is interested in renewable energy work. Jasmine focuses on residential retrofits.
  - The most interesting thing about the energy sector to them?: Andrew wants to see how Arlington will transition to the clean energy sector; Jasmine would like to see how Arlington will scale up residential retrofits.
- Claire noted that this evening meeting enabled these two people to come from the public instead of morning meetings.

## 4. Monthly update from the AIRE team (7:15) – Rich Dooley

- Rich D. presented an update on a variety of AIRE projects and plans.
- **ACTION:** For the projects listed on the PPT, tell the EC when and how the projects will come forward for the EC to see, comment, etc. They would like the opportunity to review and comment on AIRE projects.
- **ACTION:** Tim Effio asked to see the RAMP technical memo for Task 5.
- Scott Brideau asked if there was a way to show follow-up actions or recommendations from projects, plans. That is, what is next after the plan is created?
  - Rich Dooley explained that new projects done after a project or plan is done would show up as a new line item on the Progress Report on Studies and Plans slides. We will update these slides accordingly to keep the EC apprised of new projects.
- Tim Effio asked how the Inflation Reduction Act (IRA) may impact CEP implementation?
  - Rich Dooley explained that staff are currently looking at the IRA and the Infrastructure Bill (IIJA) to see if there are any funding opportunities for one or more CEP Roadmap Strategies. The IIJA guidance just arrived from the Federal government; we will wait for the IRA guidance to arrive before we can act.
- Stephanie Burns and Tim Effio asked whether there are public input opportunities for one or more of these projects.
  - Rich Dooley noted that many of these items are not policies, rather, they are implementation efforts. On a case-by-case basis, the Project Managers incorporate into those projects' opportunities for public input. The scope of the project will determine how the C2E2 and/or EC are brought into each of the projects' reviews.
  - Tim Effio stressed that the clean transportation plans are of most interest to the EC.
  - **ACTION:** Rich will ask AIRE Project Managers for any/all opportunities for public input.
- Scott Brideau suggested adding a slide to the AIRE updates slide deck to show what is coming up next or soon to give the EC a heads-up on upcoming plans, projects, AIRE activities
  - **ACTION:** Rich to talk with other AIRE staff on the best way to provide that information

- Rebecca Moser highlighted the Think BIG! Event and described the event. It'll include a Ride & Drive opportunity, ability to see EVs, kids play and food vendors, and an E-Mobility section to test out e-bikes and scooters. There will be booths (including an C2E2 booth). There will be presentations as well. She also asked the EC members to help spread the word. Oct. 2<sup>nd</sup> at the NVCC-Alexandria Campus.
  - John Bloom asked whether electric mowers could be showcased. Staff recommended that John send AIRE staff an e-mail asking the County to showcase such lawn maintenance technologies. While such technologies are not in the scope of the “future of movement” theme for the Oct. 2<sup>nd</sup> event, AIRE staff could work with other County staff, e.g., DPR colleagues, to create another event that focuses on the electrification of lawn maintenance equipment.
  - EC members were provided e-mail text and flyers to share widely to help spread the word.
- Jonathan Morgenstein thought he heard that when California ruled that it would no longer allow for internal combustion vehicles to be sold after 2035 and that Virginia followed suit.
  - That is true, however the current VA administration is trying to stop that from happening.

**5. Decarbonization Tool presentation and Q&A (7:25) - Steve Burr and Christie Amero (Cadmus Group)**

- Attachment A provides the slide deck that was presented.
- The project goal is to create a prioritization decision support tool (Power BI-based) for County building energy efficiency and decarbonization projects.
- The project teams have collected baseline facility data, including energy use data, to enter into the tool.
- Cadmus also interviewed HVAC contractors who have experience working on County facilities before.
- Tim Effio asked how the model handles multiple nuances.
  - Christie Amero noted that quantitative and qualitative inputs can be taken into account for the tool.
- Scott Sklar asked whether different measures could be compared to each other.
  - Christie Amero said that 12 measures for each of the 12 facilities would be assessed, leading to 144 total models in the tool.
- Scott Dicke asked whether any information would be made public from this tool's output.
  - Steve burr noted that the annual report would most benefit from this tool.
- Tim Effio asked whether the 12 facilities are for model validation.
  - Steve and Christie noted we will focus on ways to improve those 12 selected County facilities. The County hopes that the information coming from this tool can help inform decisions about other County facilities (other than the 12 facilities selected for this tool).
- Claire Noakes asked whether APS could benefit from this tool.
  - Steve Burr noted that he has briefed APS staff about this upcoming tool.
  - Demetra reminded the EC that AIRE hosts a quarterly interdepartmental meeting with County staff and APS staff to discuss energy matters.
- John Bloom asked whether it made sense to have the model determine how to get the existing buildings to net zero.
  - The County can assess how to best improve a building's energy efficiency and then look at how renewable energy could help us get to net zero electricity.
- The tool is intended to be a snapshot in time for these facilities. The tool is not intended to be an accounting tool.

6. Discussion of Scope of New Request For Proposals NO. 23-DES-RFP-230 “TO OBTAIN THE SERVICES OF FIRMS WITH THE CAPACITY AND EXPERTISE TO BUILD UPON THE COUNTY’S PRIOR EFFORTS AND TO SUPPORT THE COUNTY’S RESPONSE TO CLIMATE CHANGE IN A RIGOROUS, INNOVATIVE AND SUCCESSFUL MANNER ACROSS ALL CRITICAL SECTORS (BUILDINGS, TRANSPORTATION, RENEWABLE ENERGY, RESILIENCE, WATER/WASTEWATER, SOLID WASTE, AND POLICY DEVELOPMENT).” **(8:00) – EC member discussion**

- Tim noted that this item and item #7 are of interest to the EC.
- The EC would like to learn more about the RFP.
- Rick Keller would like to know how this wide-ranging RFP fits in with other projects, such as the project that Kimley-Horn is working on (DecTrans Plan). Another example is the siting of EVSE stations. How does that duplicate efforts being done already to site EVSE for the County?
  - The DES-FMB efforts will cover County EVSE siting, whereas the RFP will cover EVSE siting outside of County facilities, fleet, and activities.
- Demetra noted that the current Energy Services Contract ends on 12/31/22. So, this RFP and contracts stemming from the RFP will help address continuity of CEP implementation efforts. Also, we need a wide-ranging RFP to take us through the next five years of CEP implementation activities and be able to take advantage of emerging technologies and practices.
- This RFP is designed to address the ~96% of GHGe stemming from activities outside of County government activities.
- The specific projects will eventually come from Task Orders issued to contractors under contract with the County.
- The RFP was written to allow for large-scale contractors and boutique contractors alike. In addition, it is designed to allow for multiple awards to multiple contractors.
- The County will be interested in contractors that will help us advance the CEP implementation. That can be from emerging contractors or from large, established contractors.
- The County encouraged EC members to read the RFP and to alert any contractors EC members know who could be a good fit. The deadline for proposals is Oct. 17<sup>th</sup>.

7. The County’s Resilient Power Options (as part of September’s National Preparedness Month) **(8:30) – EC member discussion**

- Claire hoped the County could bring in County staff to discuss this topic at the October EC meeting.

8. Member Updates / Virginia Energy Plan public comments **(8:50)**

- The County plans to submit its comments on the VA Energy Plan.

9. Adjourn **(9:00)**

- The meeting adjourned at 9:06.

ATTACHMENT A

Decarbonization Tool presentation

# Decarbonization Tool Overview

Steve Burr, CEM, AICP, REP, LEED Green  
Associate

Arlington County Energy Manager

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Christie Amero, P.E.

Cadmus Project Manager



# Agenda

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Project Overview

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Data Collection and Research

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Facility Selection

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Model Development

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Interactive Decision-Making Tool



## Project Goals and Overview

Develop an internal energy efficiency and decarbonization prioritization decision support tool for Arlington's existing facilities



Collect, review and assemble existing County facility data in a bottom-up approach



Engage and collaborate across departments and collect detailed facility data for up to 12 selected facilities



Develop an energy efficiency and decarbonization measure characterization energy and cost database



Model various building efficiency and decarbonization scenarios to estimate energy, GHG and cost.

# Energy Efficiency and Decarbonization Tool Process Overview















# Data Collection and Research





# Baseline Facility Data Collection

<p>Square Footage</p> 	<p>Primary Usage (Office, Library, Garage, etc.)</p> 	<p>Onsite Fuel Types</p> 	<p>Construction Year</p> 
<p>Metering Data (Monthly and Interval)</p> 	<p>Operating Schedules/BAS Control</p> 	<p>Scope &amp; Timeframe of Retrofits</p> 	<p>Portfolio Manager Benchmarking Results</p> 






# Literature Review and Contractor Interviews

Emissions & Goals	Policies	Barriers	Cadmus Findings
<p>23% of emissions are from residential buildings and 35% are from commercial buildings.</p> <p>Increase energy and operational efficiency of all buildings.</p>	<p>Total building energy use should be at least 38% lower than 2016 levels by 2050.</p>	<p>VRF system-specific challenges including system sizing, code compliance, flexibility, and building size constraints.</p>	<p>Contractors frequently perform RTU replacements, split system installations, controls upgrades, and preventative maintenance.</p>
<p>Carbon neutrality goal by 2050, 100% renewable electricity by 2025 for County Operations and 2035 Community-wide.</p>	<p>Design and construction of new facilities and major renovations to County facilities should presume net-zero ready targets.</p>	<p>Mini-split heat pump challenges include design complexity, refrigerant leakage risk, and additional maintenance.</p>	<p>Building stock still has a lot of pneumatic controls, which makes some electrification measures challenging/costly to implement.</p>






## Energy Efficiency and Decarbonization Measure List 1/2

HVAC Equipment 	HVAC Controls 	Commercial Kitchen Equipment 
Air source heat pumps	Dual enthalpy economizer	Demand controlled commercial kitchen ventilation
Ductless mini-splits	Smart thermostats	Commercial convection ovens
Ground source heat pumps	Boiler reset controls	Commercial dishwashers
Variable refrigerant flow (VRF) systems	Chiller reset controls	ENERGY STAR commercial refrigerators
Unitary RTUs		
Gas furnace		
Gas boiler		
Variable frequency drives for pump and fan motors		
Infrared heaters		
Electric chiller		
Pipe insulation		8



## Energy Efficiency and Decarbonization Measure List (2/2)

Hot Water Heating 	Lighting and Controls 	Weatherization 
Heat pump hot water heaters	LED outdoor pole/arm or wall -mounted area and roadway lighting	Window upgrades
Instantaneous hot water heaters	Exterior lighting controls	Wall/roof insulation
Solar thermal hot water heating	LED recessed downlights	Air sealing
	LED 1x4, 2x2, and 2x4 fixtures and lamp retrofit kits	
	Daylight dimming control	
	Occupancy sensors	
	Networked lighting controls	
	Advanced lighting design (reduced LPD)	
	LED parking garage/canopy fixtures and retrofit kits	9

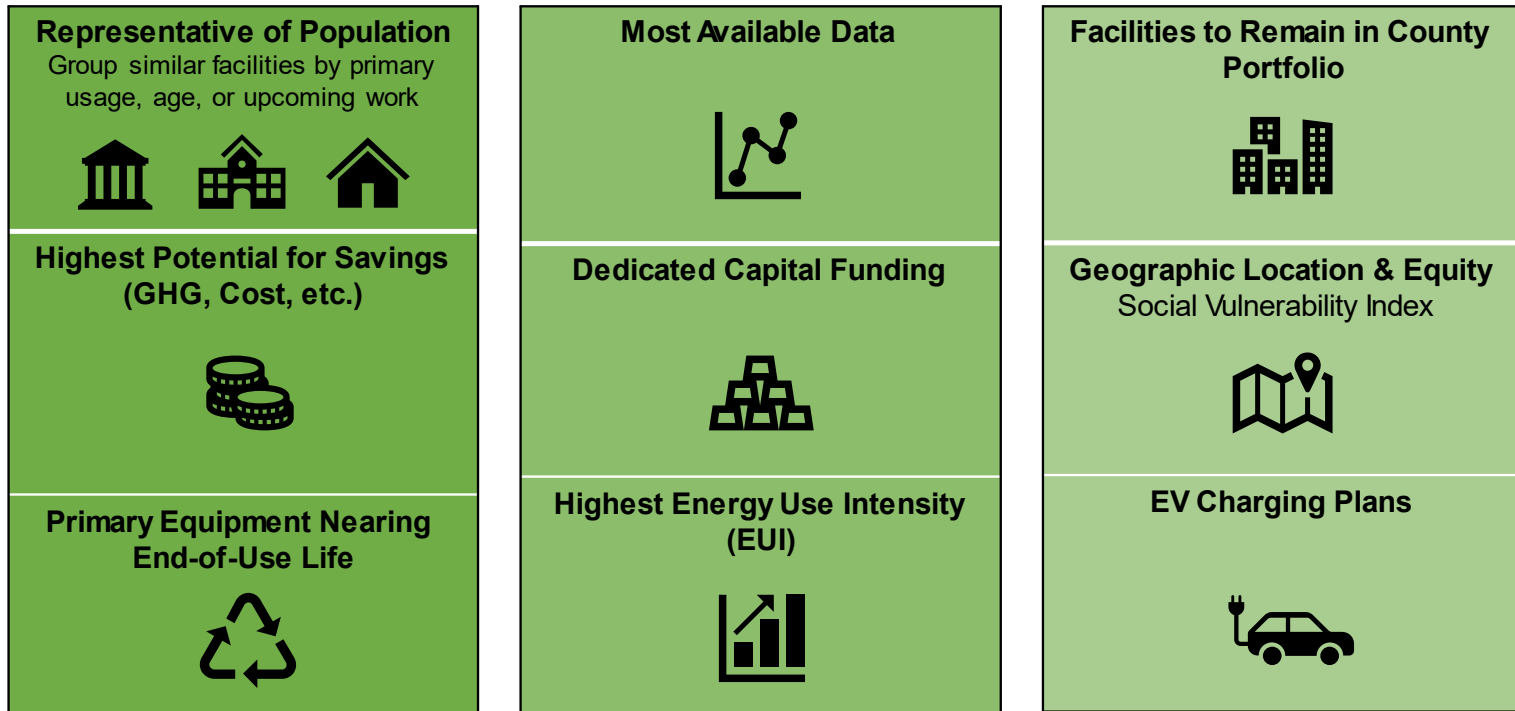


# Facility Selection



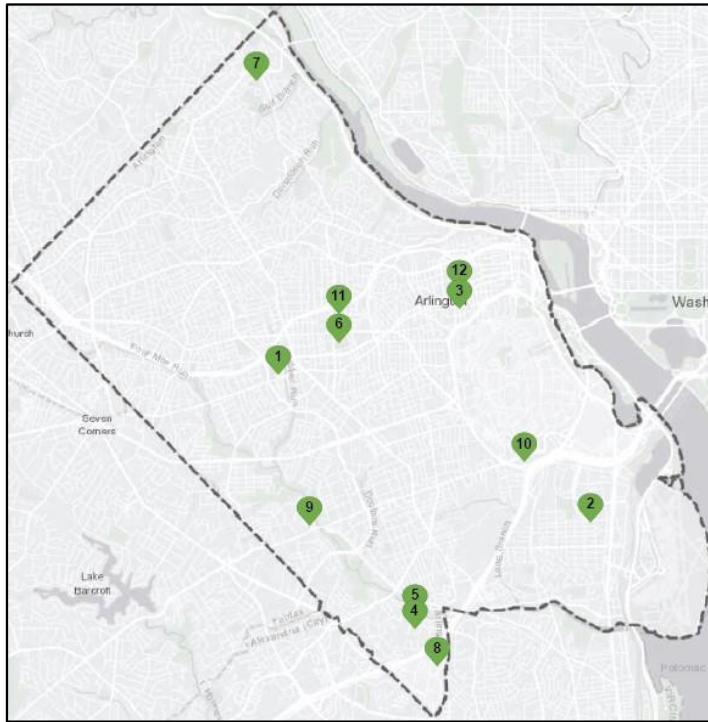


# Facility Selection Considerations





# Facility Selection List



	Facility Name	Facility End Use	Year Built	Size, sqft
1	Fire Station 2	Fire Station	2001	11,900
2	Fire Station 5	Fire Station	2008	17,000
3	The Thomas Building	Office	1966	78,321
4	Water, Sewer and Streets Administration	Office (Industrial)	1989	18,400
5	Equipment Bureau	Office/Maintenance	1983	52,800
6	Central Library	Library	1992	131,300
7	Madison Recreation Center	Community Center	1948	35,000
8	Fairlington Recreation Center	Community Center	1944	36,688
9	Arlington Mill Community Center & Garage	Community Center	2013	72,335
10	Residential Program Center	Lodging/Residential	1994	20,864
11	Quincy III	Warehouse/Office	1986	15,743
12	Courts Police Building	Courthouse	1994	322,214
	<b>Total</b>			<b>812,565</b>





## Facility Detailed Data Collection

- Data collection methods will include virtual site audits and condition asset data
- Additional data will include:
  - As-built facility drawings
  - Equipment make & models, efficiency ratings for primary HVAC, fan/pump motors hot water heating, lighting, and other primary energy end users
  - Approximate equipment age, particularly equipment approaching end-of-useful life
  - Facility and equipment operating schedules and controls
  - Anecdotal feedback on comfort and O&M challenges

Building Characteristics	Lighting	Mechanical	Other
Project Information	Fixtures	HVAC System	Misc.
Interview	Controls	Chillers	Kitchen
Photos	Lighting Systems	Boilers	Renewables
		AHUs	
		RTUs	
		HPs & ACs	
		Cooling Towers	
		Pumps	
		Terminal Units	
		DHW	



# Preliminary Feasibility Considerations

## Implementation Order & Dependencies

i.e. conduct weatherization before installing heat pumps



## Required Electrical Upgrades



## Equipment Recovery Time



## Site Specific Constraints

Equipment size, ductwork, configuration, functional space impacts

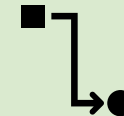


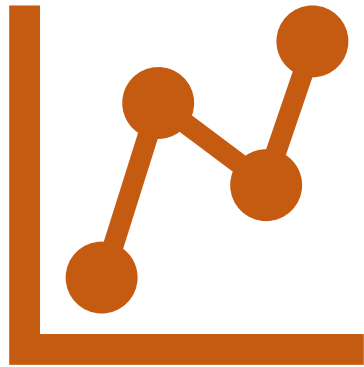
## Capacity on the Utility- side of the Meter



## Service Delivery Impacts

Maintain services during upgrades



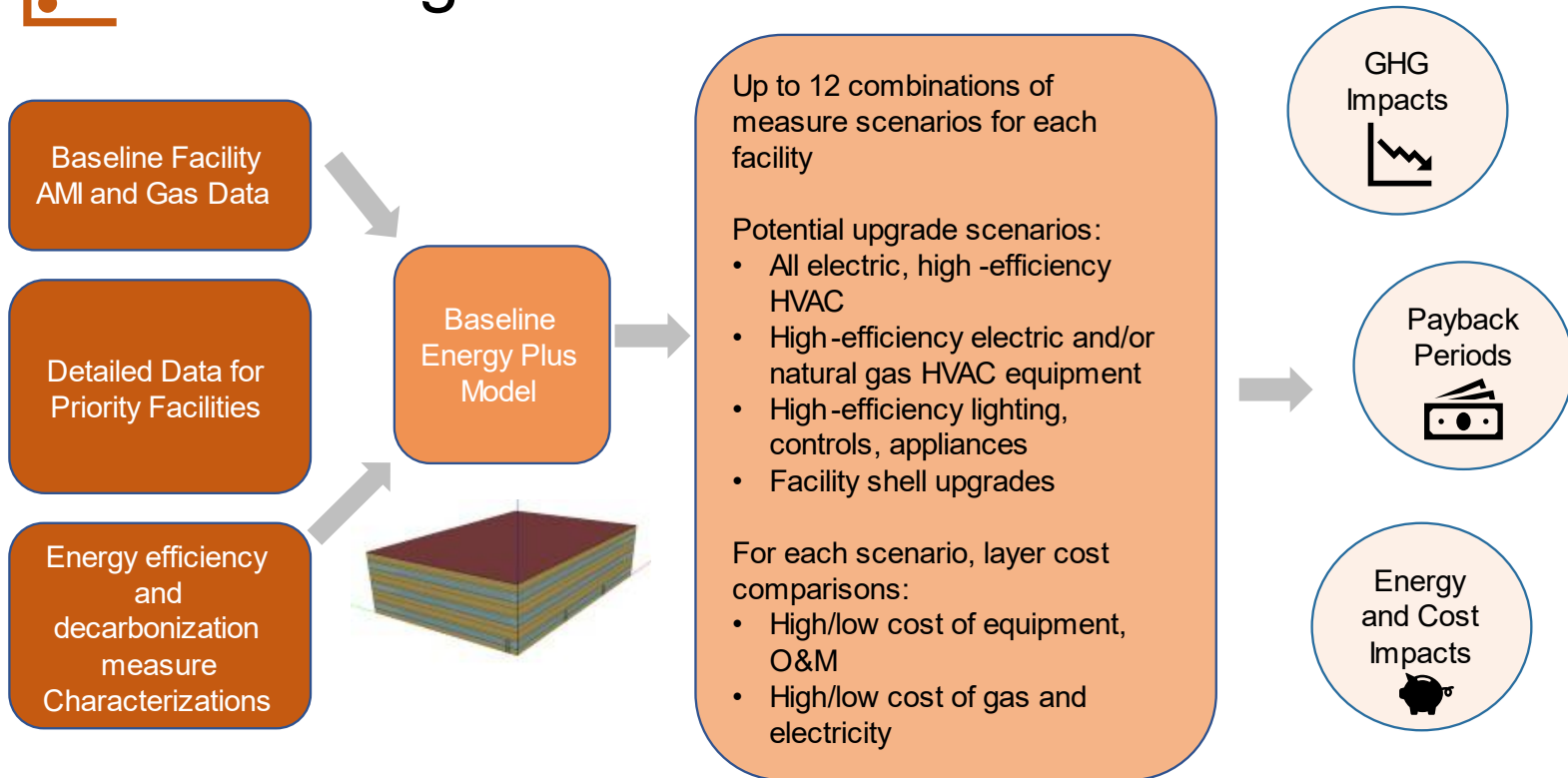


# Model Development





# Modeling Overview





## Interactive Decision-Making Tool





## Interactive Decision-Making Tool

- Create interactive Power BI dashboard to display all detailed energy, cost, and GHG modeling resulting from 12 scenarios of the selected facilities.
- Review feasibility considerations that would impact next steps.
- Display results by building and scenario, including GHG impacts, annual energy use, peak demand, baseline fuel costs, installed equipment costs, fuel costs, payback periods, and ROI.
- Use decision making tool to ID optimal scenarios for each building to achieve the desired scenario:
  - Highest GHG reductions
  - Highest energy cost savings
  - Shortest payback period



# Post-Modeling Feasibility Considerations

## Implementation Order & Dependencies

Conduct weatherization before installing heat pumps



## Required Electrical Upgrades

Electric panel upgrades



## Equipment Recovery Time



## Site Specific Constraints

Equipment size, ductwork, configuration, functional space impacts

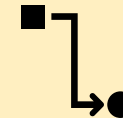


## Capacity on the Utility -side of the Meter



## Service Delivery Impacts

Maintain services during upgrades



# Moving Forward ▶▶

Decarbonization Tool will be a support tool for the FY 2023 – 2032 Capital Improvement Plan County Board Guidance.







**Questions?**