Partners in Energy

Louisville Decarbonization Planning

September 7, 2023

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AGENDA

Time	Agenda Item
12:30 – 12:40 PM	Welcome and Updates
12:40 – 12:50 PM	Vision Feedback
12:50 – 1:30 PM	Goal Setting & Scenario Modeling
1:30 – 2:15 PM	Strategy Brainstorming & Prioritization
2:15 – 2:30 PM	Wrap-Up & Next Steps

Workshop 2 Objectives:

- Share draft vision statements
- Share draft goals
- Present “big levers” necessary to drive toward identified goals and identify related strategies
- Share strategy modeling and conduct a strategy prioritization exercise to inform:
  - Louisville-specific approach
  - Sequencing and timing of key activities

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PROJECT MANAGEMENT TEAM

Xcel Energy		Community Facilitators		City of Louisville
				
Sofia Trautman Partners in Energy Program Manager	**Iffie Jennings** Area Manager	**Sarah Kaye** Lead Facilitator	**Terry Hatfield** Facilitator	**Kayla Betzold** Sustainability Manager

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STAKEHOLDER EXPECTATIONS

Actively and respectfully participate and engage in process

Educate team members on related topics so we all can learn

Represent your organization to share what's useful and what's not

Be a critical eye for credibility, transparency, and accuracy

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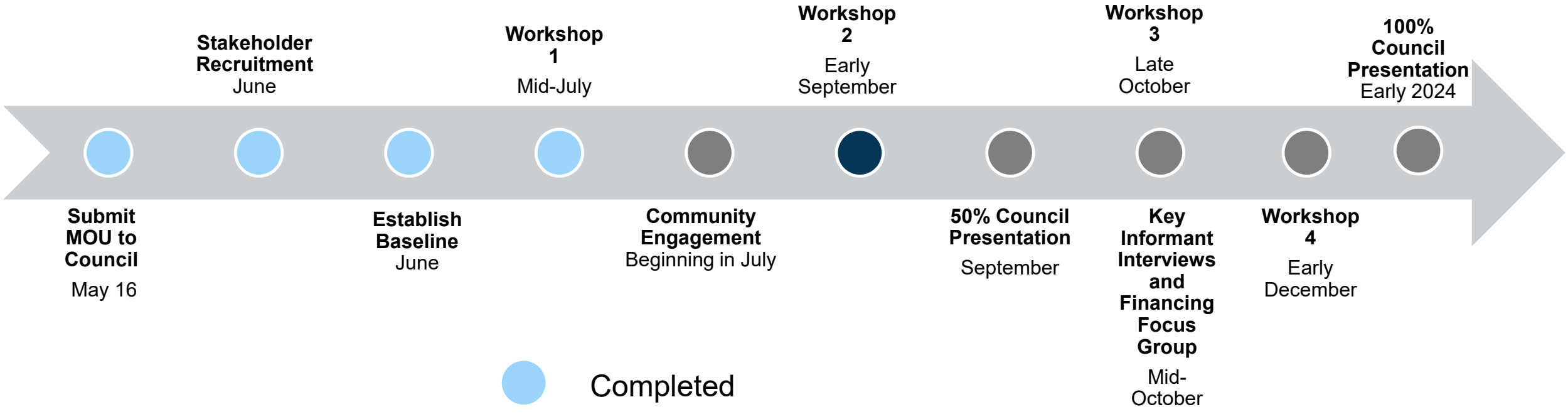
PLANNING TIMELINE



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VISION FEEDBACK

CRAFTING A VISION STATEMENT

A good vision statement….

Represents diverse community values

Describes future conditions

Serves as the “north star” for our plan framework

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DRAFT VISION

Louisville will be a healthy, vibrant, and thriving city for future generations, by drawing down carbon from the building, energy supply, and transportation sectors. Louisville will take a balanced approach, and ensure every resident and business has the opportunity to benefit along this decarbonization journey.

Image Source: City of Louisville

Image Source: Adobe Stock

GOAL SETTING AND SCENARIO MODELING

WHAT ARE WE MODELING?

Building Efficiency and Electrification

- **Increase in energy efficiency and building electrification over baseline**
  - *Participation in Xcel Energy utility programs*
  - *Increased heat pump adoption, trackable through HVAC programs*

Transportation Electrification

- **Increase in electric vehicle adoption over baseline**
  - *Total registrations from Boulder County DMV data*
  - *Existing EV adoption and trends through EValuateCO Dashboard*

Energy Supply

- **Increase in renewable energy over baseline**
  - *On-site systems plus subscriptions, prioritizing programs that help Louisville's carbon footprint*
  - *Define X kWh increase in renewable energy programs, Y kW in on-site solar*

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LANDSCAPE OF OPPORTUNITY

- **Energy Use:** How much energy is Louisville using today, and how is it anticipated to change? In what sectors?
- **Carbon Free Electricity:** What is the current level and trends of renewable energy in Louisville? In what sectors?
- **Electric Vehicles:** What are current vehicle adoption rates and charging opportunities?
- **Energy Efficiency & Building Electrification:** What utility programs is Louisville leveraging? Where can we increase for the highest impact?

HOW ENERGY UTILITY DATA GET USED

- Show where energy is used in your community
- Show past program participation
- Support decision making on focus areas, goals, and targets
- Support scenario modeling during the planning phase
- Help track and report once plan is in implementation

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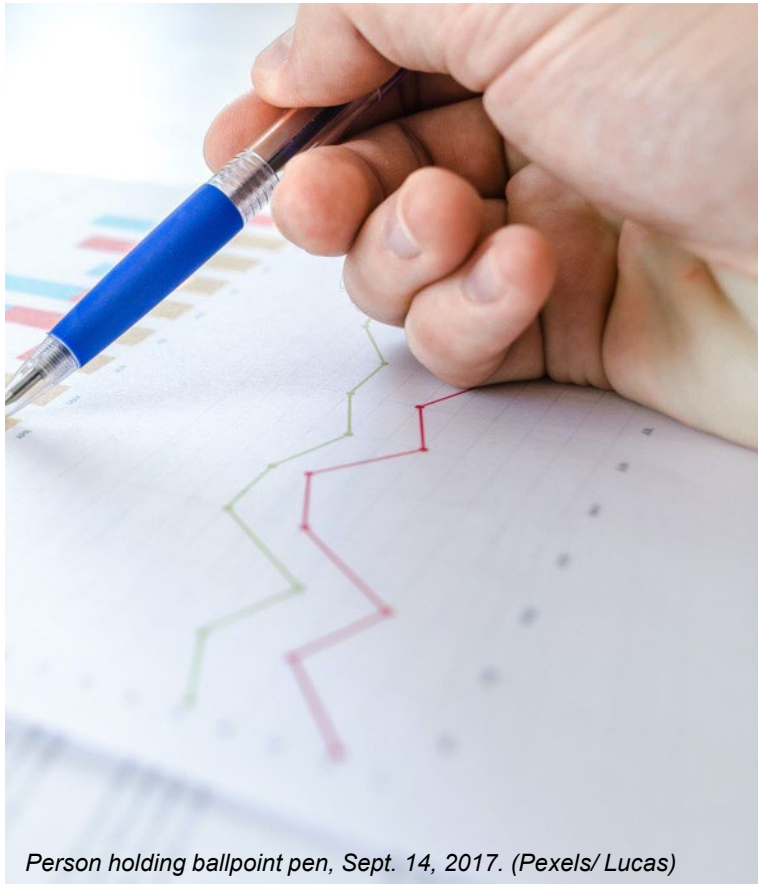
ENERGY UTILITY DATA 101

15 x15 Data Privacy Rule	Must be greater than 15 entities No single entity can account for more than 15 percent of the usage
Caveats of data processing	“Premise” ≠ “Customer” Customer types
Data includes:	**Xcel Energy:** 2016-2022
Data are unofficial for planning purposes, and results may change slightly over time	



Person holding ballpoint pen, Sept. 14, 2017. (Pexels/ Lucas)

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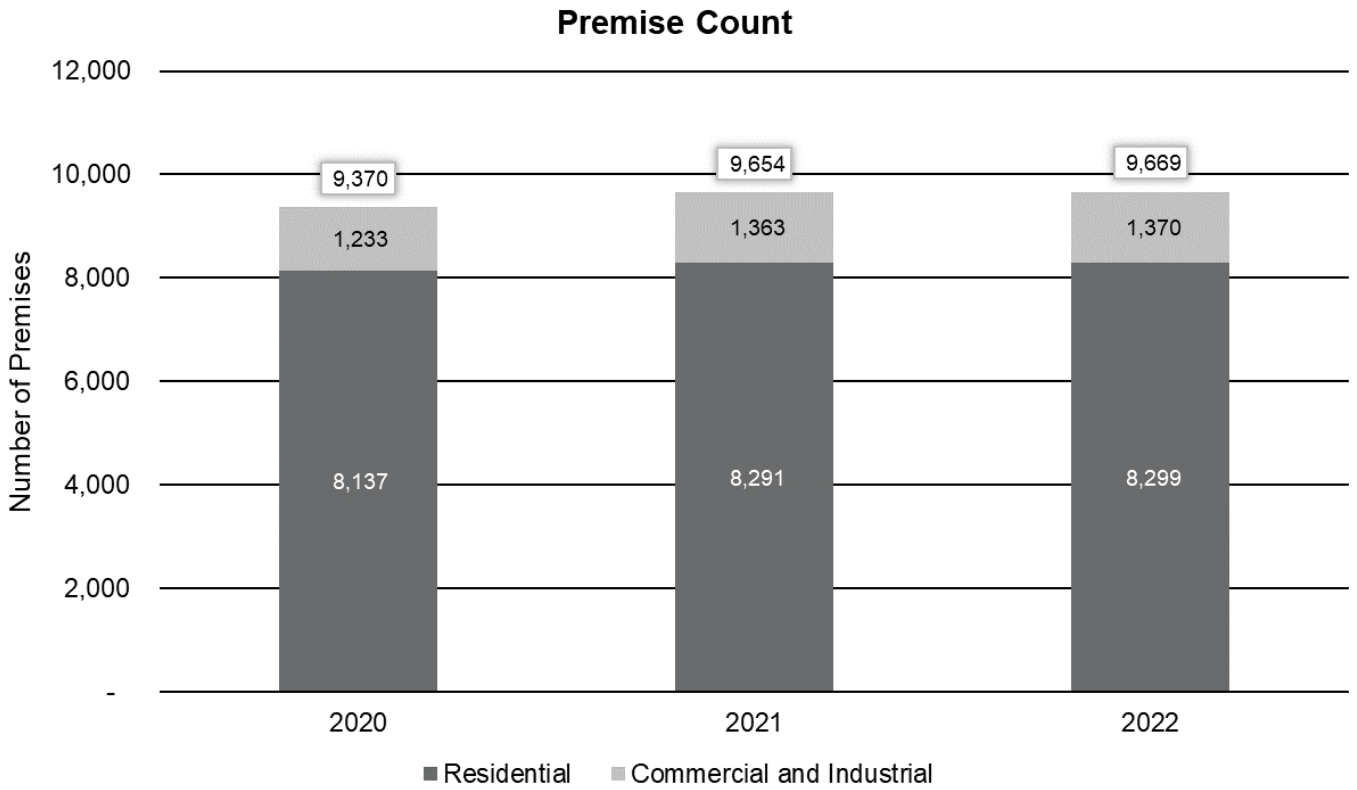
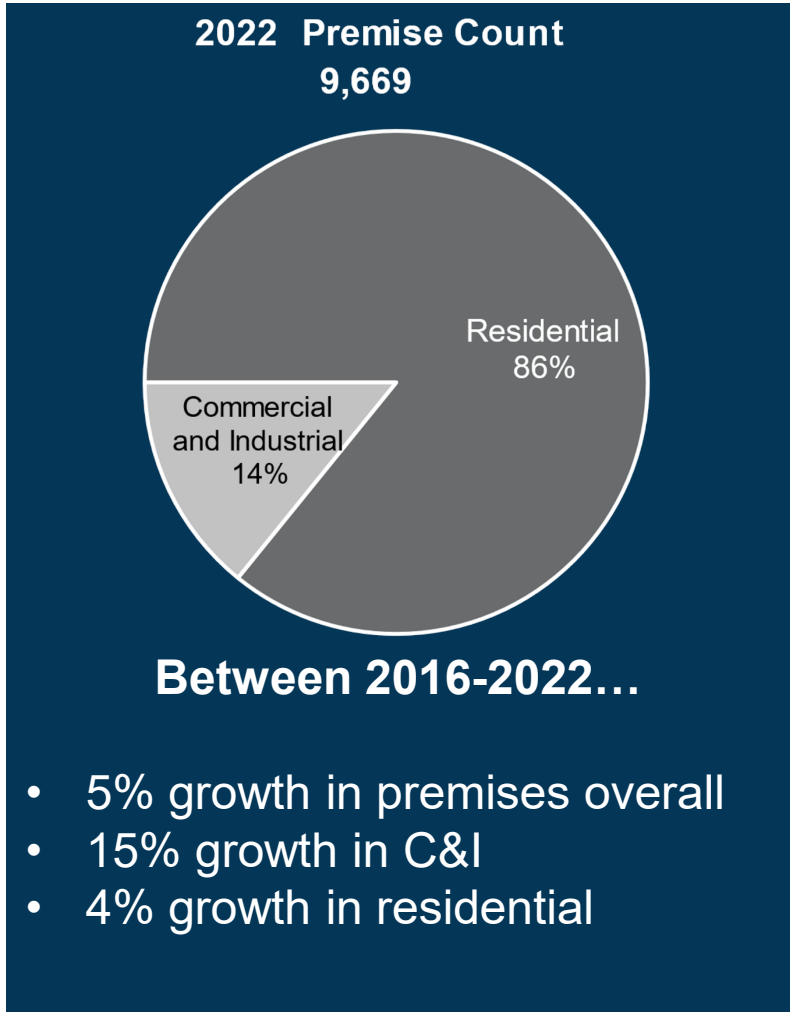
REVIEWING COMMUNITY GROWTH THROUGH UTILITY PREMISES



Source: *Partners in Energy dataset*



Between 2016-2022…

- 5% growth in premises overall
- 15% growth in C&I
- 4% growth in residential

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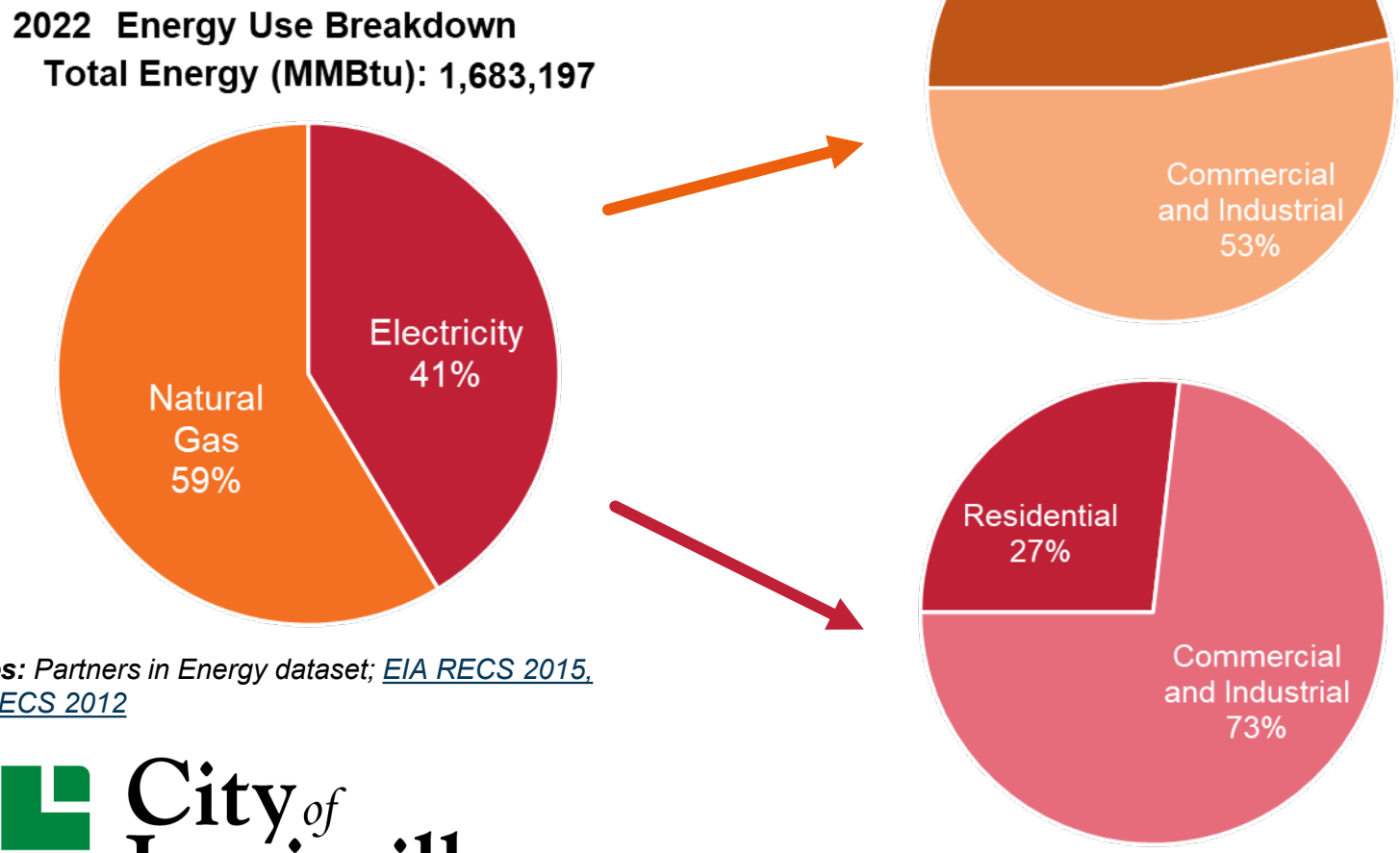
COMMERCIAL AND RESIDENTIAL ENERGY USE IN LOUISVILLE



Sources: *Partners in Energy dataset; EIA RECS 2015, EIA CBECS 2012*

Natural Gas (9.87M therms)

- More evenly split across sectors
- Primarily from space heating & water heating

Electricity (204.0M kWh)

- Driven by commercial sector
- **Residential:** Primarily from AC, lighting & electric water heating/space heating
- **Commercial:** Primarily from HVAC, lighting, and refrigeration

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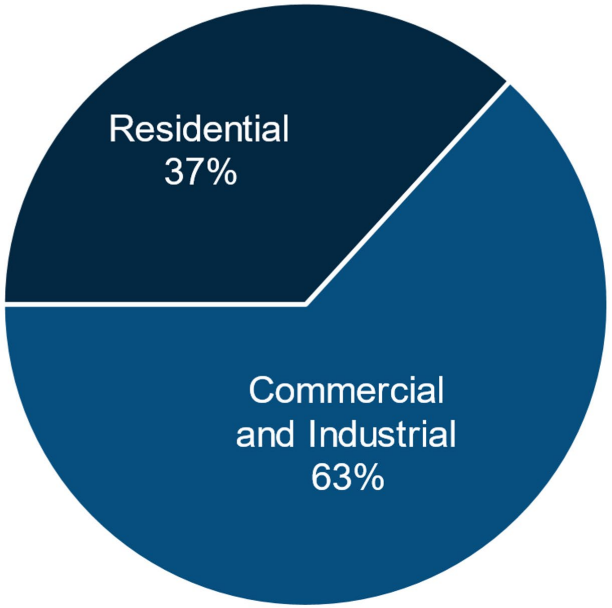
ADDING CONTEXT TO LOUISVILLE'S ENERGY USE

2022 Energy Costs ($)
$30,878,633



Residential Energy Use		Commercial Energy Use	
$1,400	Annual spend on energy for a typical Louisville home	**$14,200**	Annual spend on energy for average Louisville business
6,600 kWh	Annual electricity use for a typical Louisville home	**109,000 kWh**	Annual electricity use for average Louisville business
550 therms	Annual natural gas use for a typical Louisville home	**3,800 therms**	Annual natural gas use for average Louisville business

Source: *Partners in Energy dataset*

BENCHMARKING LOUISVILLE'S ENERGY USE

Metric	Louisville	Superior	Lafayette	L'Ville	Superior	Lafayette
Residential						
Residential annual energy cost ($)	$1,368	$1,740	$1,470			
Residential annual average electricity use (kWh)	6,592	7,868	7,144			
Residential annual average natural gas use (therms)	555	729	574			
Commercial						
Commercial annual energy cost ($)	$14,250	$4,773	$8,575			
Commercial annual average electricity use (kWh)	108,987	36,749	63,460			
Commercial annual average natural gas use (therms)	3,845	1,047	2,192			

Lower average residential energy

Higher average commercial energy

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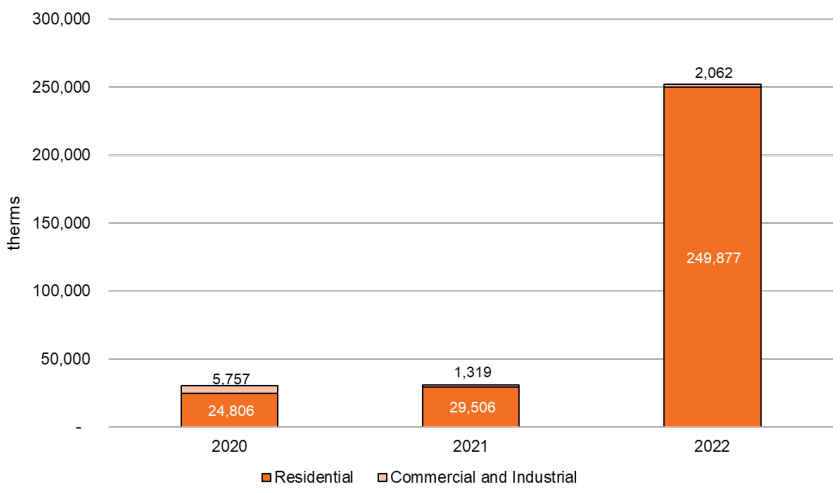
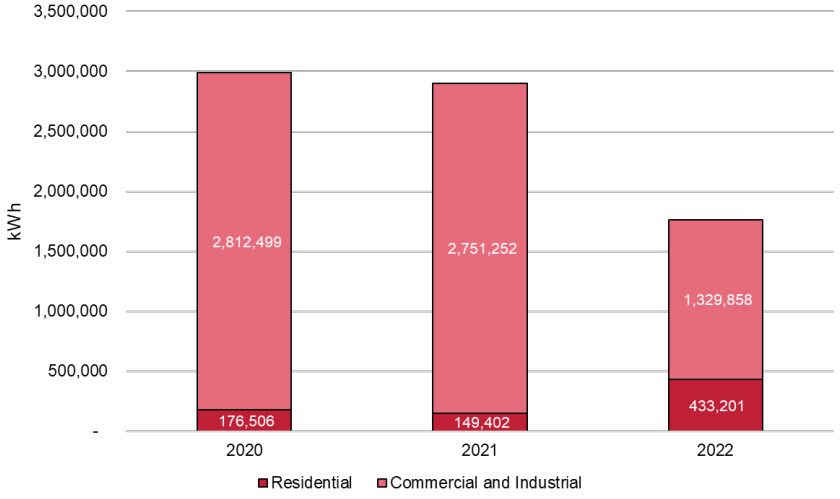
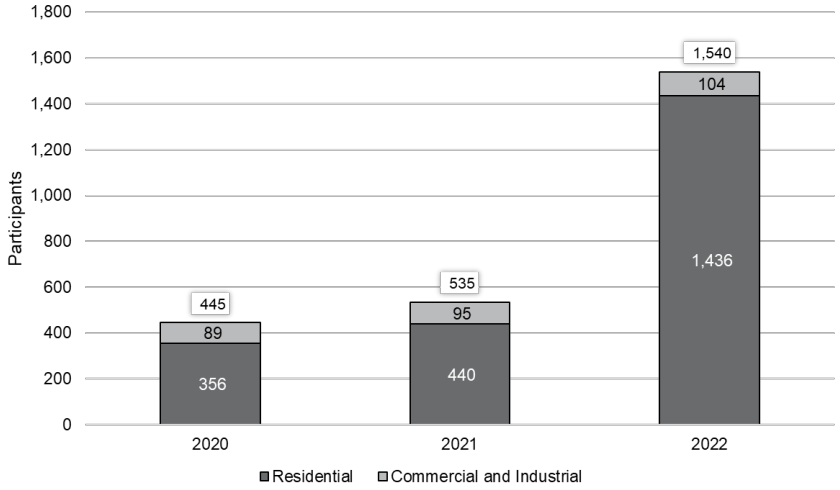
WHAT ARE LOUISVILLE'S RESIDENTS AND BUSINESSES DOING TO SAVE ENERGY?

Sector	Average Natural Gas Savings	Average Electricity Savings	Average Program Participation
Residential	101,400 therms	253,000 kWh	744 participants
Commercial	3,000 therms	2,300,000 kWh	96 participants
Total	**104,400 therms annually**	**2,500,000 kWh annually**	**840 participants annually**







Source: *Partners in Energy dataset*

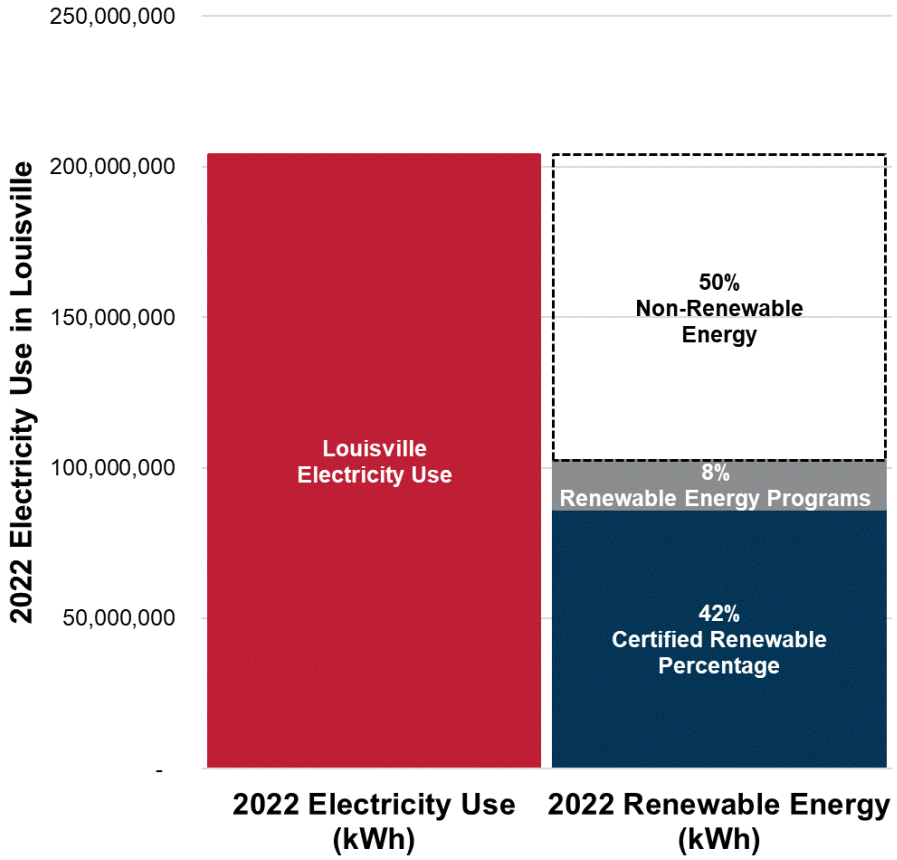
ADDING CONTEXT TO ENERGY EFFICIENCY PROGRAM EFFORTS

Average Participant Savings		Residential Energy Efficiency Stats		Commercial Energy Efficiency Stats	
$98 per year	Average **energy cost savings** per **resident** that participated	**9.0%**	Percent of Louisville **residents** who participated	**7.3%**	Percent of Louisville **businesses** who participated
$2,200 per year	Average **energy cost savings** per **business** that participated	**17%**	Percent **savings** on a typical Louisville **home combined utility bill**	**11%**	Percent **savings** on a typical Louisville **business combined utility bill**

Source: *Partners in Energy dataset*

WHAT ARE LOUISVILLE'S RESIDENTS AND BUSINESSES DOING TO SUPPORT RENEWABLE ENERGY?

Residential Renewable Energy Program Stats		Commercial Renewable Energy Program Stats	
1,256	**Residential** Participation (Total)	**92**	**Commercial** Participation (Total)
15%	**Residential** Adoption (%)	**7%**	**Commercial** Adoption (%)
2.9 MW	On-site solar[1]	**1.2 MW**	On-site solar[1]
3.9 million kWh	Subscriptions to renewable energy	**11.5 million kWh**	Subscriptions to renewable energy



[1]on-site solar represents a cumulative total capacity of systems installed since 2016 and does not represent a full accounting. It is estimated that the vast majority of solar has been installed since 2016.

BENCHMARKING LOUISVILLE'S ENERGY EFFICIENCY AND RENEWABLE ENERGY PARTICIPATION

Metric	Louisville	Superior	Lafayette	L'Ville	Superior	Lafayette
Residential						
Residential DSM Participation Rate (%)	9%	10%	6%			
Residential Renewable Energy Participation Rate (%)	15%	12%	17%			
Commercial						
Commercial DSM Participation Rate (%)	7%	3%	3%			
Commercial Renewable Energy Participation Rate (%	7%	1%	2%			

Middle of the pack residential adoption

Higher commercial adoption

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BATTERY ELECTRIC VEHICLE REGISTRATION IN LOUISVILLE

Type	2021 Total
Total Registered Vehicles	17,666
Battery EVs	468
BEVs % of Registration	3%
Plug-in Hybrids and Hybrid EVs	1,041
BEVs and Plug-in Hybrid/Hybrid % of Registration	9%

EVs % of Registration (2021)	
Boulder County Average	3%
Colorado Average	1%
National Average	0.8%

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EV DASHBOARD

Partners in Energy Interactive EV Map

Step 1
Colorado

Step 2 (option a)
Select a County

Step 2 (option b)
Louisville

Instructions: *First select the appropriate state, and then select your county or city/town of interest. You must reset your county or city/town selection in the associated drop down menu before making another selection.*

DCFC Stations

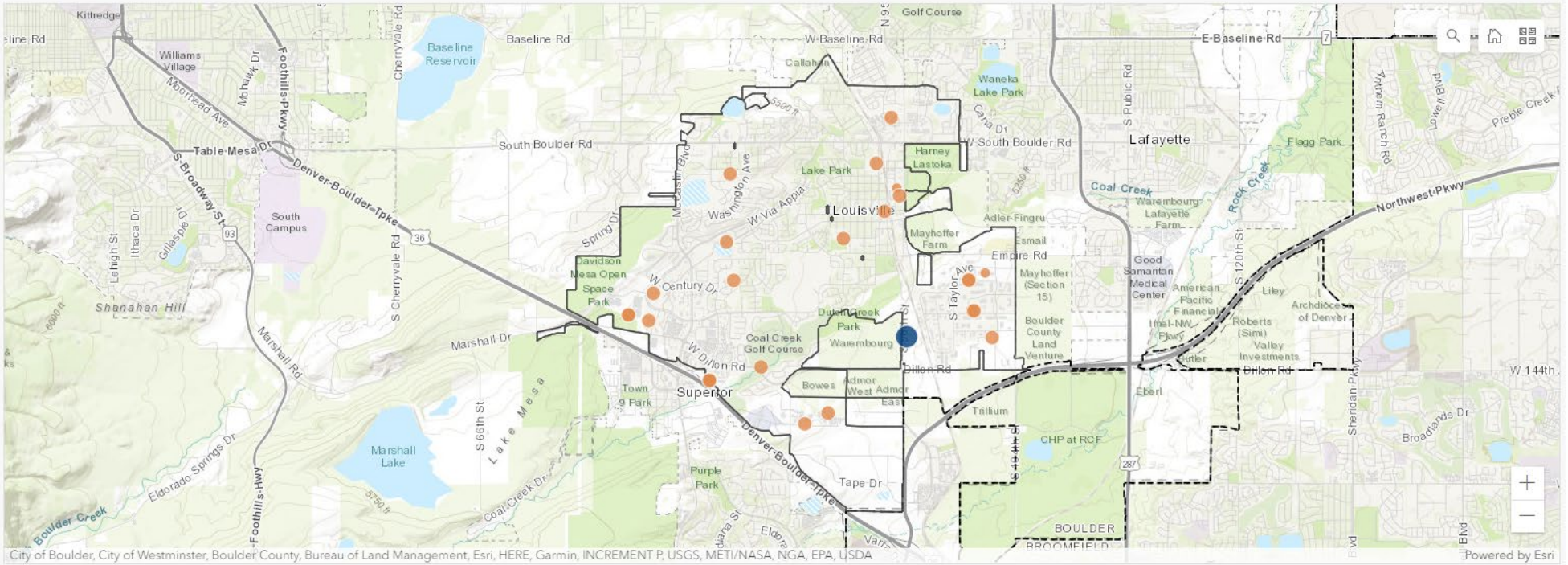
DCFC Stations

> 18
14
9
5
< 1

Level 2 Stations

Level 2 Stations

> 18
14
9
5
< 1



50

Level 2 Charging Ports

4

Level 3 Charging Ports

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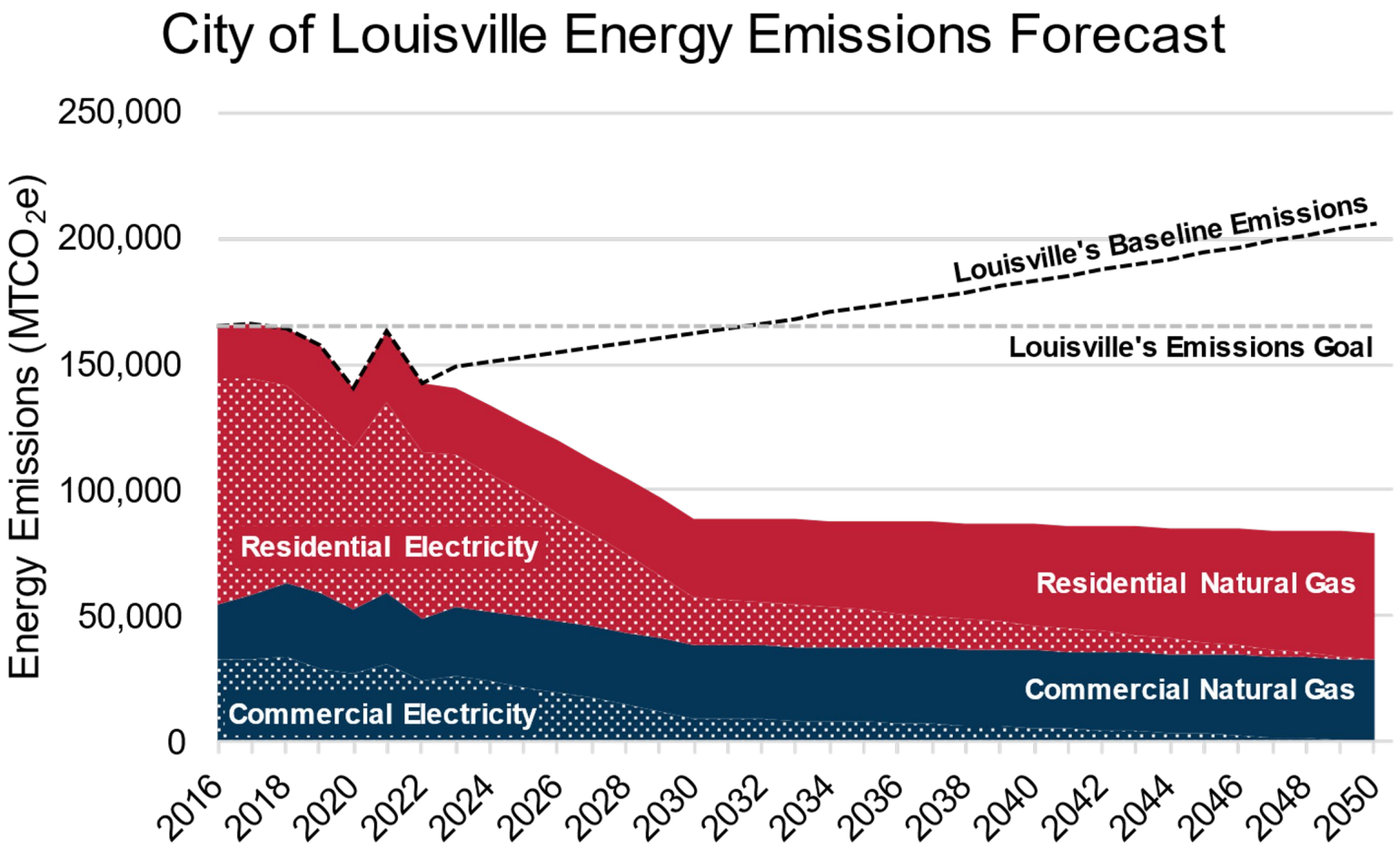

WHERE ARE LOUISVILLE'S EMISSIONS HEADING?

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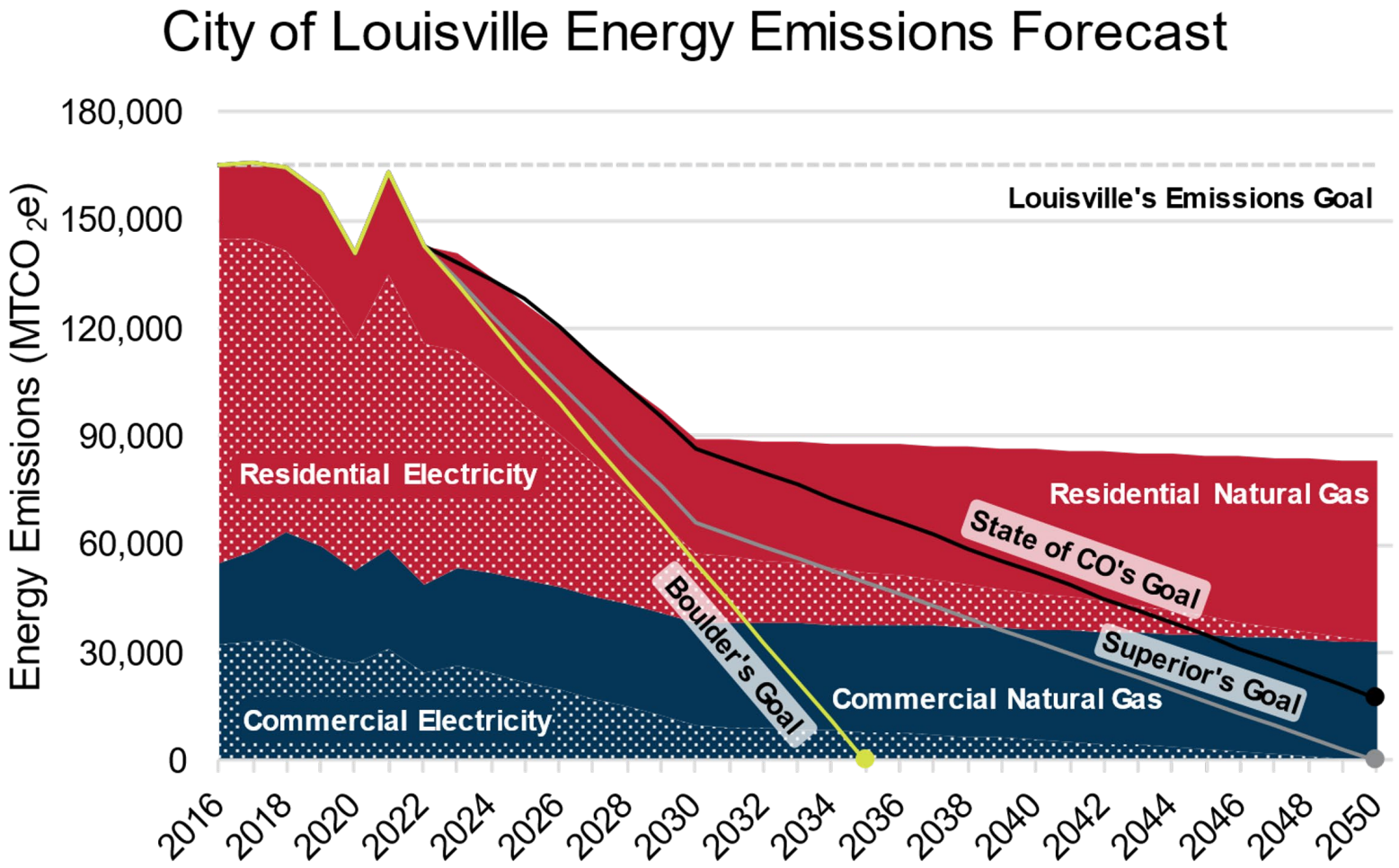

ALIGNING WITH SUPERIOR'S GOAL…

60% below 2016 GHG emissions by 2030 and net-zero GHG emissions by 2050

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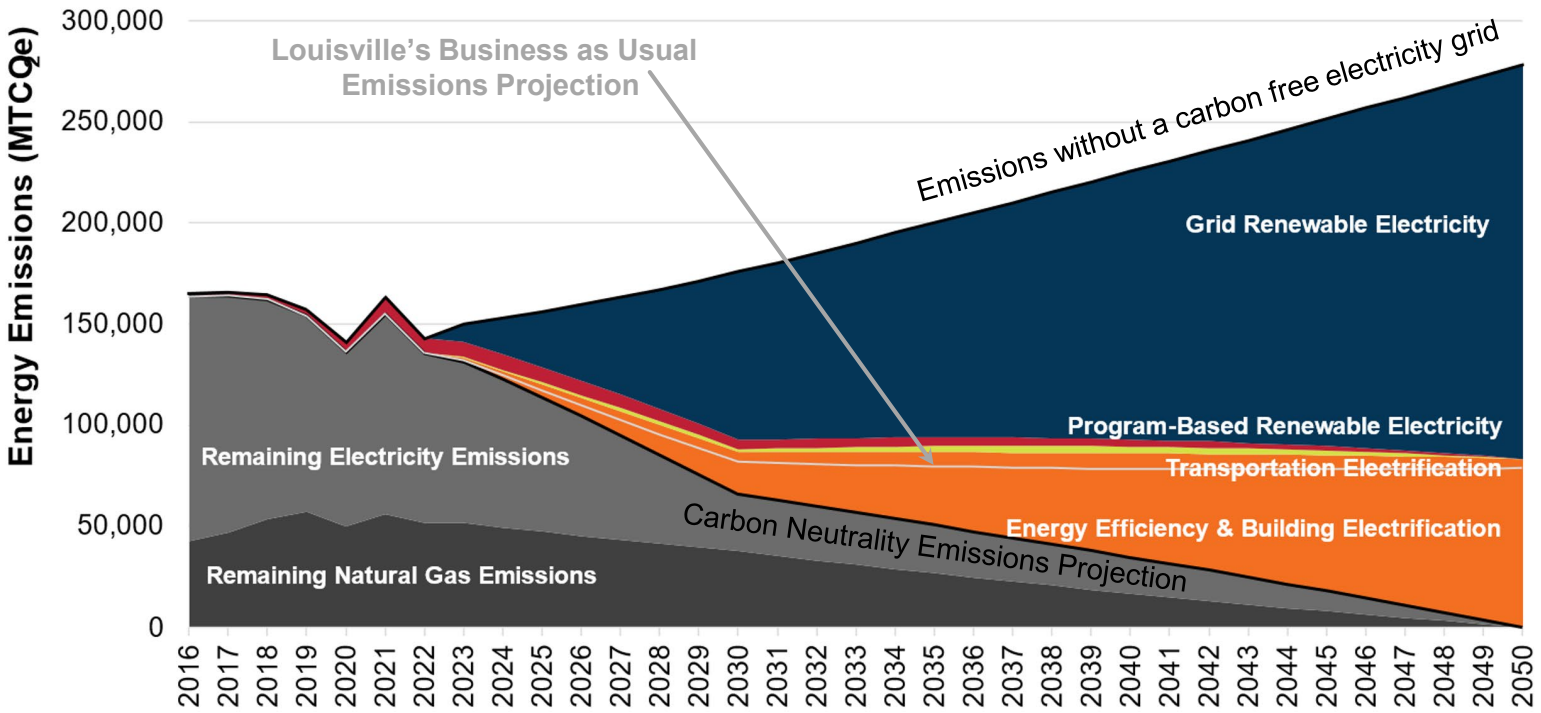

HOW ARE WE GOING TO ACHIEVE CARBON NEUTRALITY?

Xcel Energy Greening the Grid

Renewable Energy Program Participation

Adoption of Electric Vehicles & Charging Infrastructure

Energy Efficiency & Building Electrification

ASSOCIATED TARGETS (ANNUAL)

	Metric	Residential	Commercial	Total
Energy Efficiency	*Targeted DSM participation*	543	91	634
Building Electrification	*Premises electrified*	381 (2023-2030) 340 (2031-2050)	72 (2023-2030) 103 (2031-2050)	453 (2023-2030) 443 (2031-2050)
Transportation Electrification	*New EV's on the road*	~500 (2023-2032) and ~1,100 (2033-2050)		
Renewable Energy	*Participation in RE programs*	148 (new)	19 (new)	167 (new)

Compared to historical trends…

Energy Efficiency	Building Electrification	Transportation Electrification	Renewable Energy
+7% increase	Significant increase	100%-200% increase	70% increase

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WHAT WILL IT COST TO GET THERE

OUR APPROACH

Building Efficiency and Electrification

- Utilize a $/property cost by sector
- Energy efficiency upgrades and building electrification
- Scale costs by participation levels and community growth

Transportation Electrification

- Include costs for charging infrastructure per charger by sector
- Include averages for EV costs
- Scale costs by EV adoption, vehicles per public charger, and vehicles per household

Energy Supply

- Utilize an installed $/watt for on-site solar cost by sector
- Add subscription costs to renewable energy programs by sector.
- Scale costs by new installations/subscription totals.

FINANCIAL MODELING RESULTS*

Focus Area	Estimated Potential Residential Normalized Costs	Estimated Potential Commercial Normalized Costs
Building Efficiency & Electrification	$3,000 - $35,000 per household	$98,000 - $697,000 per business
Transportation Electrification	$1,100 - $2,600 per level 2 charger plus vehicle costs	$5,300 - $7,500 per level 2 charger plus vehicle costs
Energy Supply	$36 subscription or $19,500 average solar array	$1,000 subscription or $251,000 average solar array
Total	**$4,100 - $57,000**	**$104,300 - $956,000**

*Represents a range of overall average total costs, not including Xcel Energy rebates, State/Federal funding through the IRA, or other financial resources.

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STRATEGY BRAINSTORMING AND PRIORITIZATION

HOW ARE WE GOING TO MEET OUR GOAL?

STRATEGIES – WHAT GETS DONE

A strategy is an implementable and measurable ***action*** that addresses a focus area and makes progress toward goals

- Does it have a measurable outcome?
- Is it implementable?
- Does it have good support?
- Is it cost effective?

Source: Pexels/ fauxels : Photo of team near table, Nov. 5, 2019.

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EXAMPLE STRATEGY LEVERS

Policy

Require

Incentivize

Programmatic

Education

Advisement

Funding*

Financing

Market enticement

City-led investment

*funding may require policy (e.g., levying taxes, fee programs)

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REMINDER: WE ARE AIMING TO MAKE A BIG IMPACT

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EXISTING STRATEGIES

Strategies in blue are from Louisville's Sustainability Action Plan.
Strategies in Beige are stakeholder ideas from workshop p1

Building Efficiency and Electrification

Educate
Promote available efficiency and sustainability programs for residents and businesses.

Benchmarking
Develop a campaign to encourage commercial/industrial benchmarking of energy consumption through the use of data tracking software.

Advise/Fund
…Engage commercial/multifamily facility managers and property owners on energy conservation efforts and resources.

Analyze
Understand the remaining life of all carbon production equipment

Transportation Electrification

Install
Support and promote installation of EV charging stations at commercial/industrial development and sites.

Educate
Provide educational opportunities and programs on PHEV and EV adoption to residents and commercial entities.

Incentivize/Fund
Pursue opportunities … [to support residents in purchasing] EVs and electric bikes with County or other regional partners.

Carbon Free Energy Supply

?
Identify barriers to renewable energy participation and facilitate implementation of solutions.

Finance
Promote low-interest financing for residents and businesses to integrate renewable energy.

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RANKING CRITERIA

	Fit for Partners in Energy	Relative GHG Impact	Staff Impact	Potential res/biz Financial Impact	Equity Impact
low	This is outside the scope of what Partners in Energy typically does	Benefits are indirect (e.g., broad education, benchmarking)	no new staff (0.1)	No direct cost impact (e.g., analysis)	No direct benefits for low income, persons living in affordable housing, and people of color
medium	Portions of task fall in Partners in Energy's wheelhouse; portions of task are outside	Some benefits direct; some indirect (e.g., targeted outreach/education)	part time staff needed (0.5)	Some direct, some indirect cost impact (e.g., education)	Some direct some indirect benefits to low-income individuals, persons living in affordable housing, and individuals of color
high	This is Partners in Energy's Wheelhouse	Benefits are direct and immediate (e.g., solution-oriented, funding)	full time or more staff needed (1)	Direct cost impact (direct install/solution-oriented)	Mostly direct benefits to low-income individuals, persons living in affordable housing, and individuals of color.

GHG impact was weighted most heavily for building efficiency/electrification strategies, then transportation, then energy supply, based on the relative importance of individual action in these sectors.

Preliminary Strategy Ranking Results

Focus Area	Strategy	Fit for Partners in Energy	Relative GHG Impact	Staff Impact	Financial impact to biz/res	Equity Impact	Total Score
Building Efficiency/ Electrification	Promote available efficiency and sustainability programs for residents and businesses	3	3	3	2	2	13
Building Efficiency/ Electrification	Develop a campaign to encourage commercial/industrial benchmarking of energy consumption through the use of data tracking software.	3	3	2	2	1	11
Building Efficiency/ Electrification	Develop a targeted outreach strategy to engage facility managers and property owners on energy conservation efforts and resources.	3	6	2	2	1	14
Building Efficiency/ Electrification	Understand the remaining life of all carbon production equipment	1	3	1	3	1	9
Transportation Electrification	Support and promote installation of EV charging stations at commercial/industrial development and sites.	3	6	2	1	2	14
Transportation Electrification	Provide educational opportunities and programs on PHEV and EV adoption to residents and commercial entities.	3	2	3	2	2	12
Transportation Electrification	Pursue opportunities for pooled purchasing programs for EVs and electric bikes with County or other regional partners.	1.5	6	1	1	3	12.5
Carbon Free Energy Supply	Identify barriers to renewable energy participation and facilitate implementation of solutions.	3	2	1	1.5	3	10.5
Carbon Free Energy Supply	Promote low-interest financing for residents and businesses to integrate renewable energy.	3	3	1.5	1	3	11.5

WRAP UP AND NEXT STEPS

Objectives:

- Plan support
- Support for funding opportunities
- Barriers and opportunities

Logistics

- Will be shared through Engage Louisville
- Will run through October
- Review results at W3 and use to inform strategy action plans and implementation

COMMUNITY SURVEY

NEXT STEPS

- Workshop 3: late-October
  - Develop detailed action plans for strategies prioritized for short term implementation.
  - Refine targets to help measure strategy implementation (e.g., utility program participation)

Homework:
1. **Review action table examples and prompts**
2. **Review program descriptions**

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