

# CADMUS

## Buncombe County and City of Asheville Renewable Energy Transition Planning

June 20, 2019



# Purpose and Workshop Objectives

- To inform stakeholders on the project status, including:
  - Key takeaways from the January workshops;
  - Policy analysis and impact assessment findings;
  - Overall highlights from this work;
  - Draft action steps that the City and County could take.
- To gather feedback from stakeholders on:
  - How these policies and priorities resonate with perspectives in the community and at the City and County;
  - Points of interest and opportunities.

# Agenda

- Project background and approach
- Project recap and what we heard from stakeholders
- High level takeaways
- How we got here
- Results
- Small group discussions

# Introductions: Who is in the Room?



# Project Background and Approach

# Why we're here

## Buncombe County and the City of Asheville have ambitious renewable energy targets

### County Targets

- Utilization of 100% renewable energy for county operations by 2030
- Utilization of 100% renewable energy for the entire county by 2042

### City Targets

- Transition municipal operations from fossil fuel based energy sources to renewable energy by December 31, 2030
- Office of Sustainability to develop a renewable energy plan that supports the County's community-wide goal.

# Project goals and approach

- **Goals of this project:**

- To identify policies, programs, and strategies that Buncombe County and the City of Asheville can pursue to meet their targets of **100% renewable energy for county operations and city municipal operations by 2030**, and **100% renewable energy county-wide by 2042**.
- To identify strategies that will allow the county to **achieve other important priorities**, such as lowering energy costs, and achieving equity and social justice goals.

- **Primary Tasks:**

- Identification and evaluation of a **wide range of potential policy options**.
- **Quantitative modeling of several scenarios** for meeting county and city energy targets, demonstrating impacts and the implications of different potential approaches.
- **Developing a report** documenting these results for Buncombe County and the City of Asheville leadership and stakeholders.

# Summary of Project Approach



## Stakeholder Feedback

- Kick-Off Workshops
- Interviews
- County-wide Survey



## Potential Policies and Strategies Analysis

- Identified potential actions
- Assessed them against stakeholder priorities
- Combined them into potential pathways



## Data Modeling

- Business As Usual Case
- Impacts on electricity mix
- Cost impacts to City or County
- Site identification and feasibility



## Stakeholder Feedback

- Workshop to gather feedback on findings



## Final Report

- Outline findings from process
- Provide flexible set of priorities and actions
- Assess pathways potential pathways for the renewable energy transition



A low-angle photograph of a dense forest with tall trees and a bright blue curved graphic overlay. The text "What we heard from stakeholders" is written in white on the blue overlay.

# What we heard from stakeholders

# Potential Actions Discussed During 1<sup>st</sup> Workshop

## **Direct county or city action**

- Generally has the greatest capacity to act, but the most limited scale of impact

## **Collaboration with state or utility actors to grow markets**

- Greatest opportunities for impactful policy changes, but reliant on action of others

## **Expanding purchasing options within the county**

- Options vary in terms of impact and accessibility, would still require residents and business to act

# Potential Actions Discussed During 1<sup>st</sup> Workshop

## Direct County or City action

- Install RE projects on all county/city facilities
- Incentivize onsite RE through county/city mandates
- Establish local RE incentive program(s)
- Reduce permitting, zoning, and inspection barriers to RE
- Offer county/city property for lease for RE development
- Organize Community Solar or Shared Community Solar Projects

## Collaboration with state or utility actors

- Increase REPS
- Adjust state NEM policies
- Enhance third party ownership framework
- Create utility-owned or on-bill-financed rooftop solar programs
- Engage the utility in achieving energy goals

## Expanding purchasing options within the country

- Partner with utility and/or third party to procure RE
- Purchase or lease RE on-site to supply county/city operations
- Host a RE bulk purchasing program
- REC-based purchasing by county, city, or residents/businesses
- Virtual PPA agreements by county, city or residents/businesses

# Renewable Energy Purchasing Options Discussed During 1<sup>st</sup> Workshop

## Direct Installation and Ownership

County, City or its residents/businesses install and own renewable energy projects in the county.

This could involve either selling or retiring the associated RECs.

## Power Purchase Agreements (PPAs)

County, City, or its residents/businesses sign contracts for power with renewable energy developers.

North Carolina law currently does not permit third party PPAs. The County or City would need to lobby the State legislature to enable this option.

## REC-Based Purchasing

County, City or its residents/businesses arrange for the purchase and retirement of the underlying RECs of renewable energy projects, without purchasing the associated power.

This will always entail a premium over power purchasing without RECs.

## Virtual PPAs

County, City, or its residents/businesses purchase utility power as normal, but separately agree to a Virtual PPA with a renewable energy developer.

The county/customer pays or is credited by the developer according to the difference between the market price of power and the agreed-on strike price, and the customer receives the associated RECs.

# Key Takeaways from the Intake Interviews

- Renewable energy goals are being pursued because Buncombe County and the City of Asheville community members are interested in **environmental sustainability and social good**.
- **Outreach** needs to be conducted to stakeholders within municipal operations at both the County and City levels on this initiative.
- **Funding is a key area of concern** for municipal advisory group members around implementation of the potential strategies.
- **RECs present some options** in terms of flexibility for meeting the municipal operations goals.
- The City and County have both **taken steps to date** on renewable energy and energy efficiency.
- The water resource plant and reservoir have been mentioned as **potential sites for solar generation**.

# Key Takeaways from the Advisory Committees

- **Education and outreach** to the community are important to develop a collective voice around the priorities and structure for meeting the County's and City's renewable energy goals.
- There are **challenges balancing and learning about community expectations** and what is needed to accomplish this work.
- There are **cost-concerns** related to implementing some of these policies, and concerns around raising revenues.
- The **timeframe is ambitious** to meet these goals.
- **Energy efficiency should continue to be a priority** at the municipal level and within the community to reduce consumption in addition to transitioning to renewables.
- There are **limitations on the County and City's ability to meet these goals** based on the state context.
- **Collaboration with the local utilities** should continue.

# Priorities for the Renewable Energy Transition

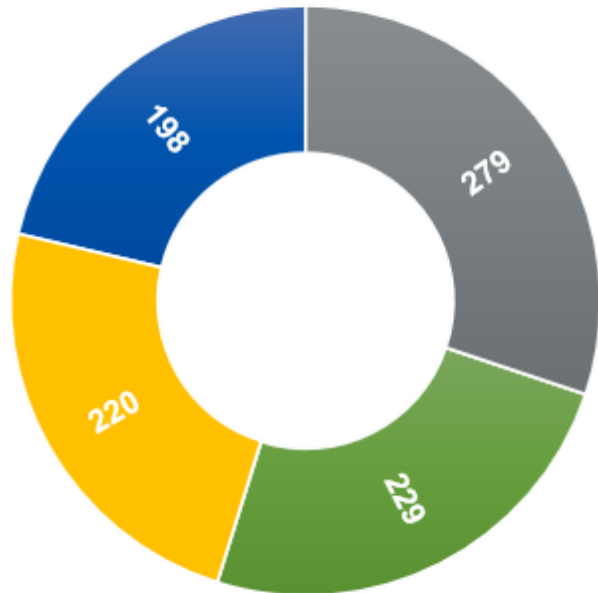
- Locally developed renewable energy projects
- Equity and affordability
- Energy efficiency
- Cost to the City/County
- Environmental benefits
- Community impact, involvement, and education
- Utility engagement
- Changes at the utility and state levels



# Renewable Energy Survey Results

- The survey was conducted between February 27<sup>th</sup> and March 15<sup>th</sup> of 2019.
- 935 people responded (93% identified as residents of Buncombe County).

How would you prefer the City and County define “local” renewable energy?



■ Buncombe County ■ North Carolina ■ Southeast ■ Not Concerned

**75%**

of respondents do not consider nuclear energy “clean” energy

**44%**

of respondents think that the City and County should reinvest cost-savings into more renewable energy projects



# Assessing Potential Actions:

## Scale

- The potential for the action to **increase the level of Renewable Energy in the County-Wide / Community energy mix**

## Financial Impacts

- Represents the **overall costs the County or City** will incur to implement the strategy

## Feasibility

- How **achievable the action** is considering burden on staff, policy barriers, political and technical barriers

## Distributional Equity

- Refers to **distributional effects of the benefits and harms** associated with the action, including **impacts of renewable energy availability, cost savings, local public health, and workforce development**

## Environmental Impact

- Refers to the **environmental benefits and harms** associated with the action including impacts on **resiliency, land use, emissions, and conservation.**

## Local Impact

- Illustrates whether the action will have a **positive local impact**, increase **renewable energy generation within the County/City limits**, and the ability of the action to **improve the County/City's position as a leader** for renewable energy in NC.

# Example: Locally Owned On-Site Generation

**Description:** Install renewable energy projects on available County/City facilities and County/City-owned lands; County/City would own the project(s) and the renewable energy certificates.

Scale	Potential Financial Impact	Feasibility	Distributional Equity	Potential Environmental Impacts	Potential Local Impacts
<b>Low</b>	<b>Medium</b>	<b>Medium</b>	<b>Neutral</b>	<b>Positive</b>	<b>High</b>
<ul style="list-style-type: none"> <li>• Limitations on space to host RE projects. County/City own a small amount of building and land stock.</li> <li>• Impact for municipal goals will be a bit higher.</li> </ul>	<ul style="list-style-type: none"> <li>• On-site generation will incur upfront costs, but the County/City may see savings over time.</li> </ul>	<ul style="list-style-type: none"> <li>• Requires staff time, allocation of funds, executive buy-in.</li> <li>• May face potential technical barriers.</li> </ul>	<ul style="list-style-type: none"> <li>• Local generation can improve local air quality, and provide opportunities for workforce engagement.</li> <li>• Does not actively address inequities in energy costs and burdens</li> </ul>	<ul style="list-style-type: none"> <li>• Installation of local RE can improve resiliency, reduce emissions and improve air quality</li> <li>• Assumes that onsite generation is developed on existing buildings or brownfields rather than greenfields.</li> </ul>	<ul style="list-style-type: none"> <li>• Local installations are highly visible, inherently local, and provide opportunities to demonstrate leadership.</li> </ul>

# Potential Pathways

Once evaluated against these different categories, **actions were grouped based on these initial findings into potential pathways.**

## Pathway A: Actions already being undertaken by Buncombe County and/or the City of Asheville

- This pathway examines how actions that the **City and County are already taking** or are working to implement might help Buncombe County reach its goals.

## Pathway B: Local Actions Identified as Feasible and High Priority

- This Pathway examines how **local actions** that are seen as **highly feasible** will help the County and City reach their goals.

## Pathway C: Alternative Purchasing Options

- This pathway examines how **renewable energy “purchasing” options** through renewable energy certificates or virtual PPAs may help the County and City reach their goals.

## Pathway D: State/Utility Actions

- This pathway examines how **changes at the state or utility level** may impact the County’s and City’s progress towards their goals.

# Q&A

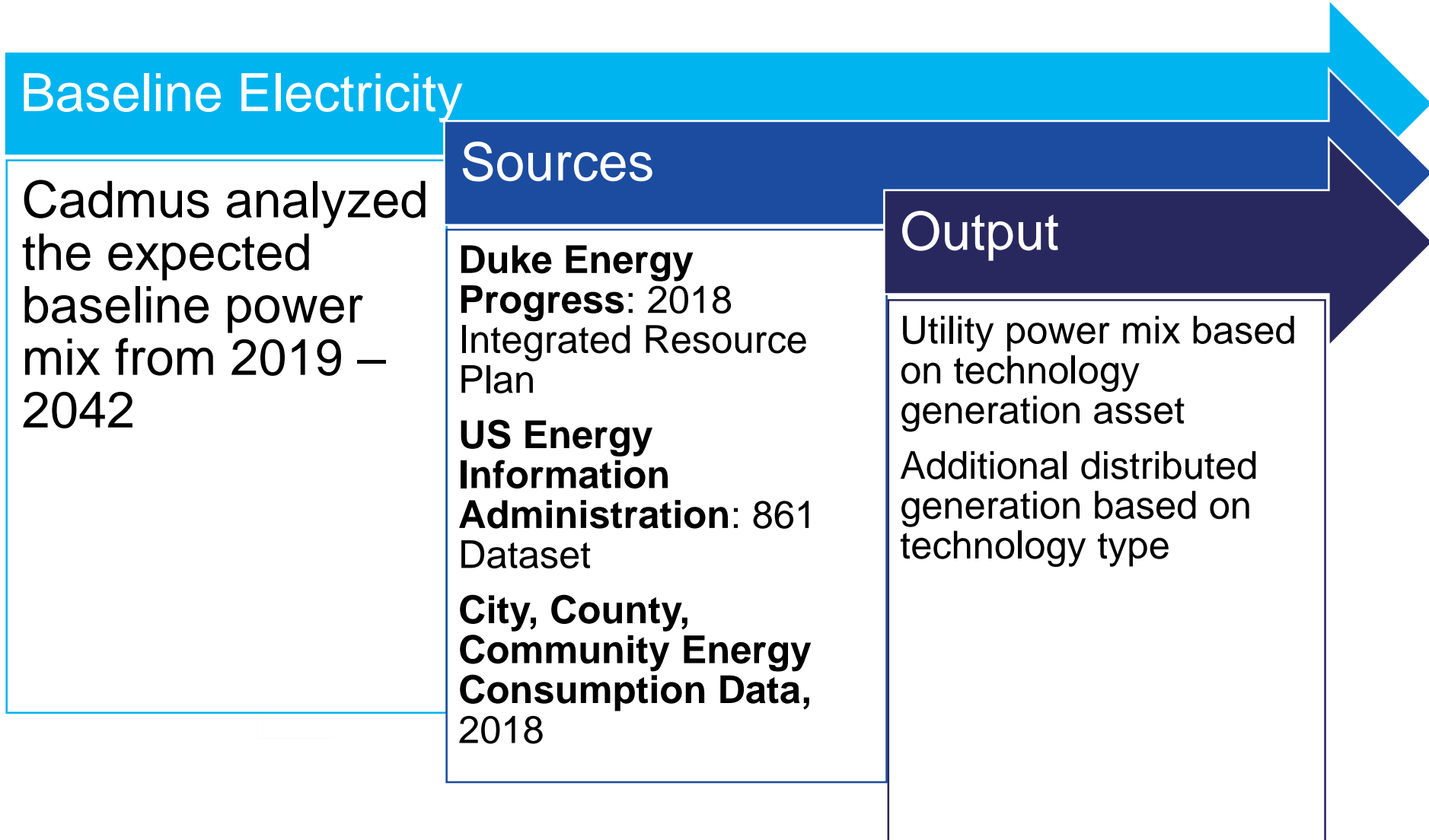
A low-angle photograph of a dense forest with tall trees and a bright blue curved graphic element. The text "How we got here" is overlaid on the left side of the image.

How we got here

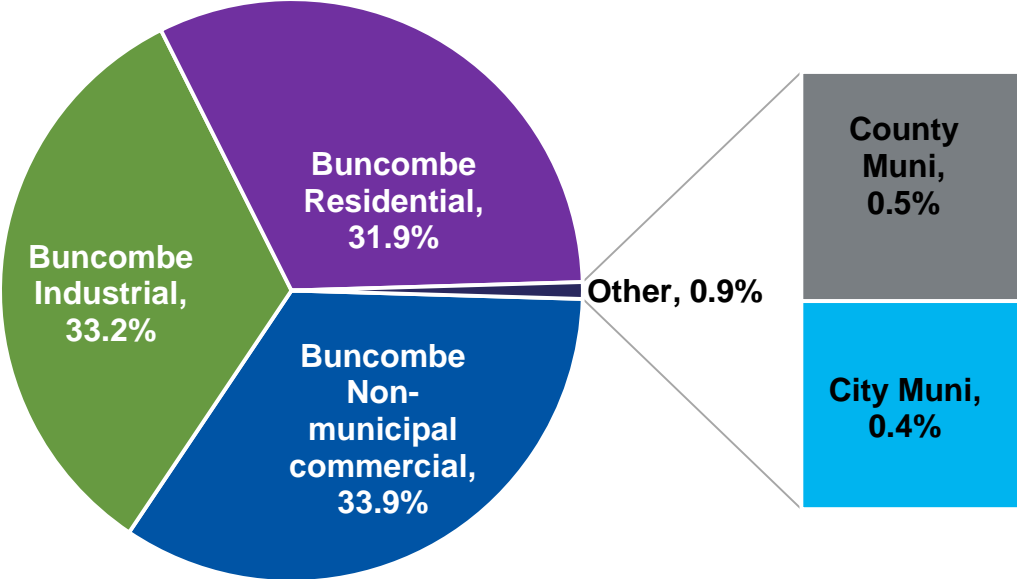


# Baseline Power Mix Projections

# General Approach and Sources



# 2018 Energy Consumption



- Buncombe Non-municipal commercial
- Buncombe Industrial
- Buncombe Residential
- County Muni
- City Muni

Entity	Electricity Usage 2018 (kWh)	Natural Gas Usage 2018 (therms)	Percent of Energy Supply that is from Electricity 2018
City (Municipal Buildings)	15,841,931	352,143	61%
County (Municipal Buildings)	17,006,387	403,672	59%
Non-Municipal (Buildings)	3,026,276,101	100,135,321	51%



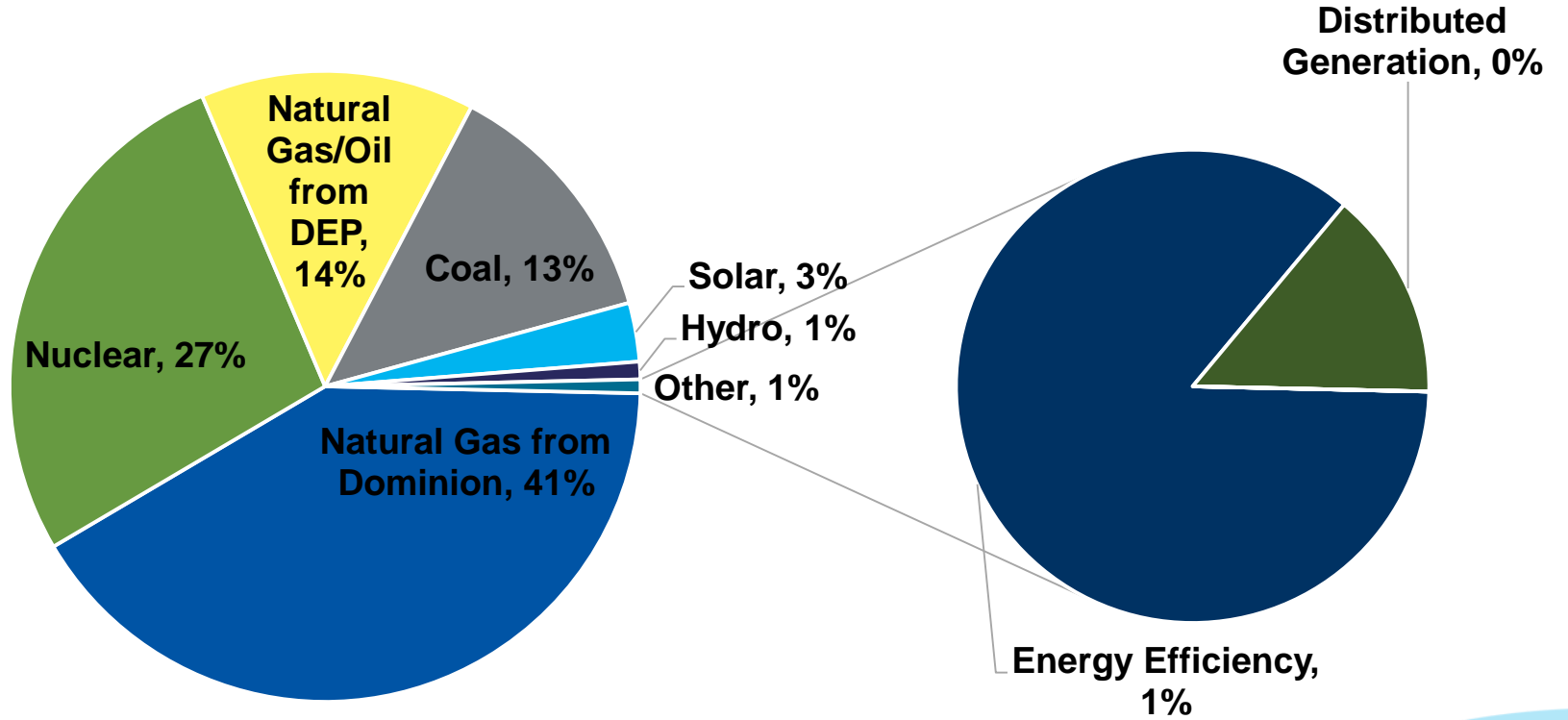
# 2018 Buncombe County Baseline Energy Mix

## Electricity - Duke Energy Progress (59%)

Nuclear	27%
Natural Gas/Oil	14%
Coal	13%
Solar	3%
Hydropower	.9%
Energy Efficiency	.6%
Distributed Generation	.1%
Combined Heat and Power	0%
Wind	0%

## Natural Gas – Dominion Energy (41%)

Natural Gas	41%
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# Duke Energy Progress

## Current Breakdown



- 3 nuclear generating stations: 3,705 MW
- 3 coal-fired stations: 3,592 MW
- 4 combined cycle natural gas/oil units: 3,011 MW
- 6 combustion turbine natural gas/oil units: 3,377 MW
- 4 hydroelectric stations: 227 MW
- 4 utility-owned solar facilities of 141 MW, plus 2,617 MW of solar PPAs: 2,758 MW

## Planned Retirements



- Hydro will be 99 percent phased out by 2030
- Coal output will also decrease by 33 percent by 2030
- No more big changes though 2042

## Planned Additions



- The majority of these retirements will be replaced by natural gas/oil, with a small amount being replaced by solar and energy efficiency.

# Duke Energy Progress

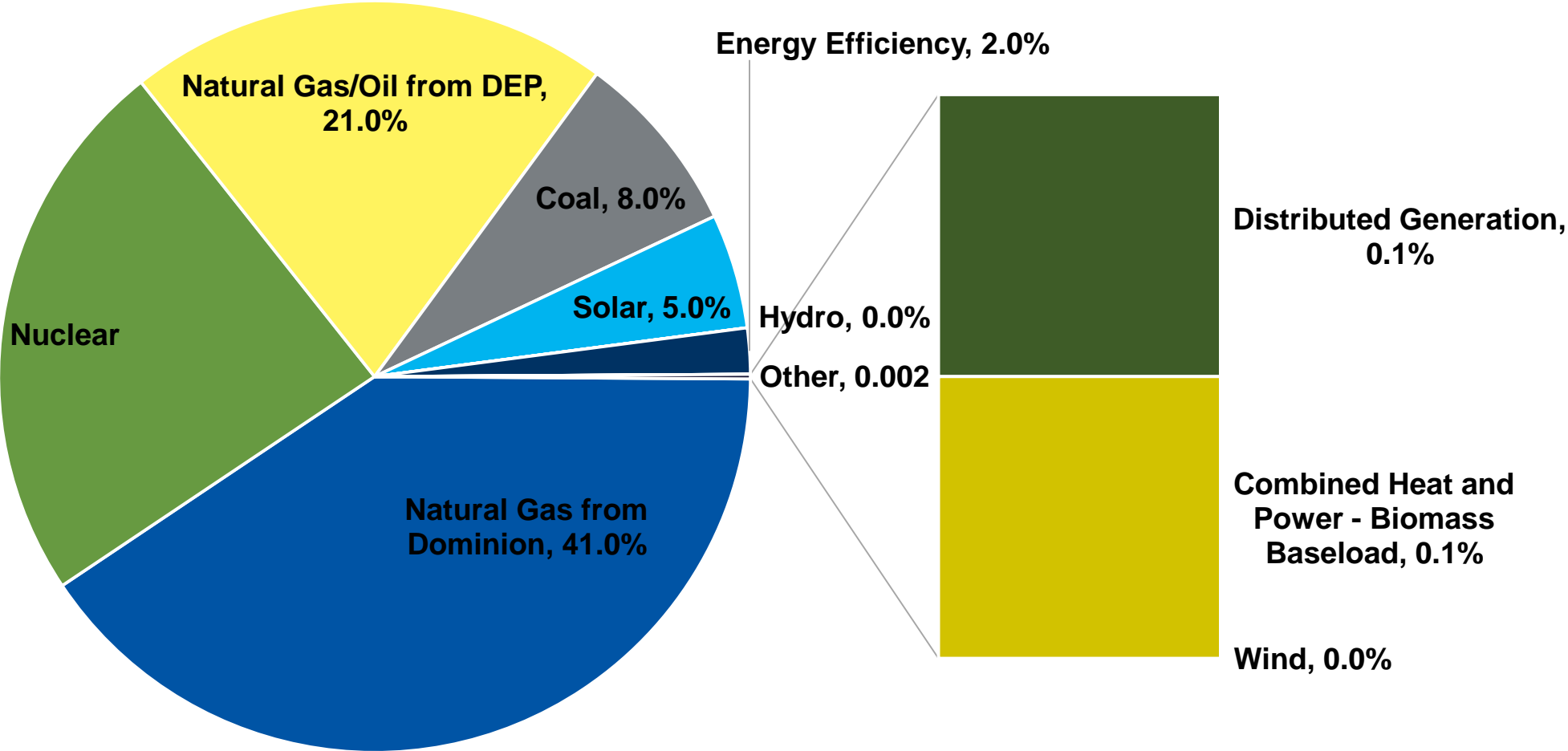
## Planned Changes by 2030

- 17% of current fleet slated to retire
  - Majority nuclear and coal
  - Smaller amount from hydro
- 12% will be replaced by natural gas/ oil, with the remaining from renewables and energy efficiency

## Planned Changes by 2042

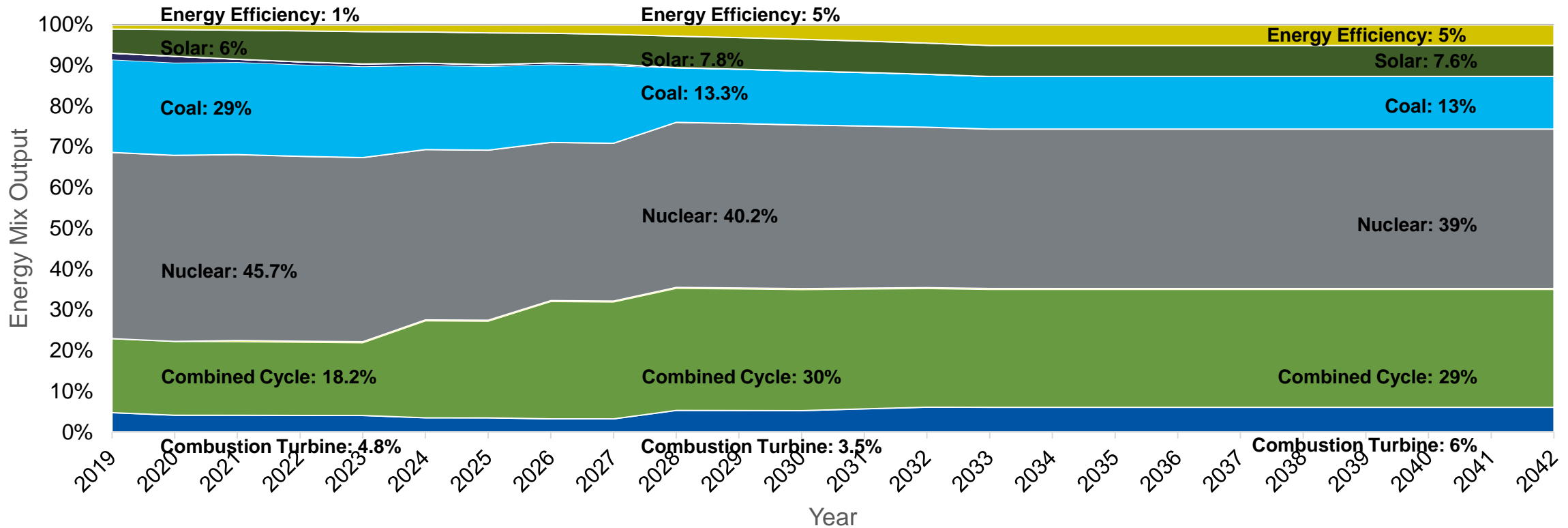
- 18% of current fleet slated to retire
  - Mostly nuclear and coal
- Majority to be replaced by natural gas/oil, small amount of additional energy efficiency

# 2030 Baseline Energy Supply Mix



# 3. 2019-2042 Baseline Electricity Supply Mix

Electricity Mix for Dep Customers: 2019 - 2042



- Combustion Turbine: Natural Gas/Oil
- Combined Heat and Power - Biomass Baseload
- Coal
- Wind
- Energy Efficiency
- Combined Cycle: Natural Gas/Oil
- Nuclear
- Hydropower
- Solar
- Distributed Generation

# Baseline Electricity Supply Mix

	DEP's Energy Output + Distributed Generation (%)				
	2019	2025	2030	2035	2042
Combustion Turbine: Natural Gas/Oil	4.8%	3.5%	5.3%	6.1%	6.1%
Combined Cycle: Natural Gas/Oil	18.2%	23.7%	29.7%	28.9%	28.9%
Combined Heat and Power - Biomass Baseload	0.0%	0.2%	0.2%	0.2%	0.2%
Nuclear	45.7%	41.7%	40.2%	39.1%	39.1%
Coal	22.8%	20.6%	13.3%	12.9%	12.9%
Hydropower	1.6%	0.4%	0.0%	0.0%	0.0%
Wind	0.0%	0.0%	0.0%	0.0%	0.0%
Solar	5.9%	7.8%	7.8%	7.6%	7.6%
Energy Efficiency	1.0%	1.9%	3.5%	5.0%	5.0%
Distributed Generation	0.1%	0.1%	0.1%	0.1%	0.1%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100.0%</b>
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Hydropower	1.6%	0.4%	0.0%	0.0%	0.0%
Wind	0.0%	0.0%	0.0%	0.0%	0.0%
Solar	5.9%	7.8%	7.8%	7.6%	7.6%
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Percent Carbon-free (Includes Nuclear and EE)	54.3%	52.2%	51.8%	52.1%	52.1%

## Key Takeaways:

- Coal is a significant part of the current electricity supply mix
- Coal plants are expected to retire over time

# Baseline Electricity Supply Mix

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## Key Takeaways:

- Solar is expected to increase overtime
- This analysis assumes that Duke will meet its energy efficiency target



# Baseline Electricity Supply Mix

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## Key Takeaways:

- The combined cycle: natural gas / oil is expected to increase over time

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Percent Carbon-free (Includes Nuclear and EE)	54.3%	52.2%	51.8%	52.1%	52.1%

## Key Takeaways:

- The total % of renewable electricity supply is not expected to change dramatically over time
- The total % of carbon free electricity supply is not expected to change dramatically over time

# Q&A



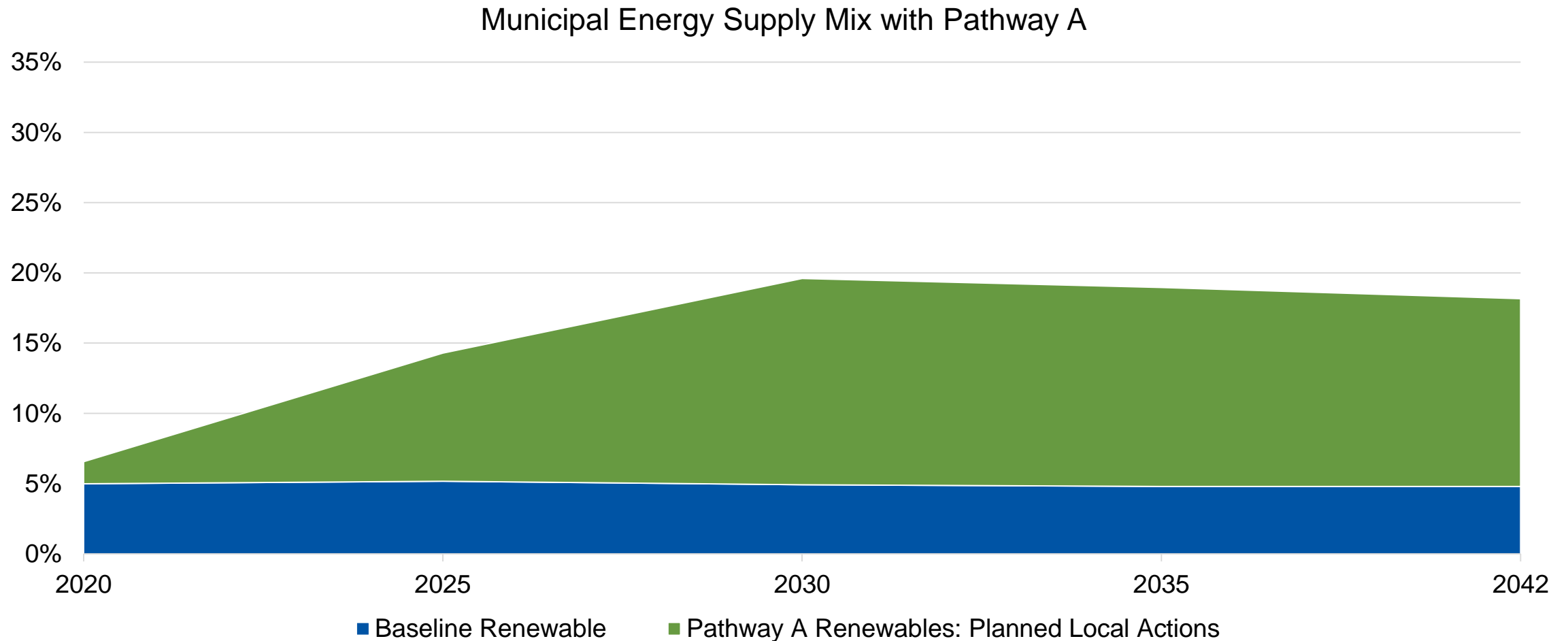
# Impacts of Potential Actions

# Pathway A: Planned Local Actions

## Strategies already in motion by the City and County

- Municipalities purchase renewable energy projects
- Streamlined permitting, zoning, and inspection for the community
- Municipalities lease government land to the utility for renewable energy development
-

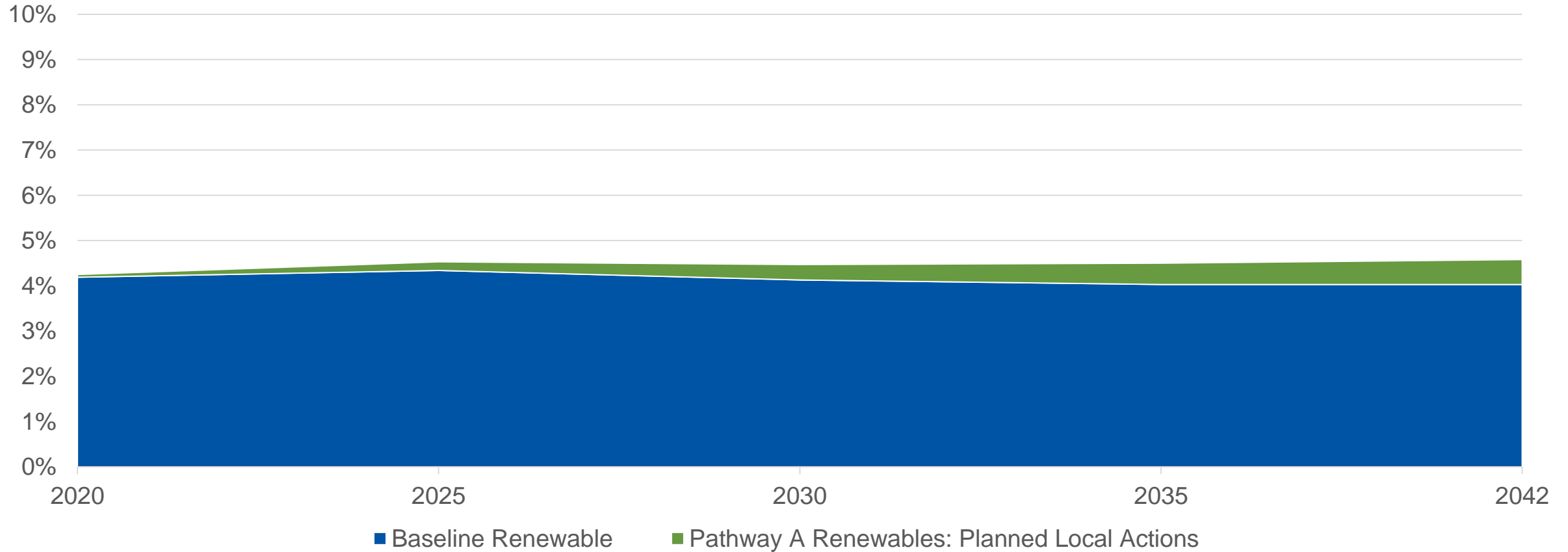
# Pathway A: Impact to Energy Mix (Municipal)



# Pathway A: Impact to Energy Mix (Community)

Local Planned Actions by the City and County

Community Energy Supply Mix with Pathway A



# Pathway B: Strategies with High Feasibility and High Local Impact

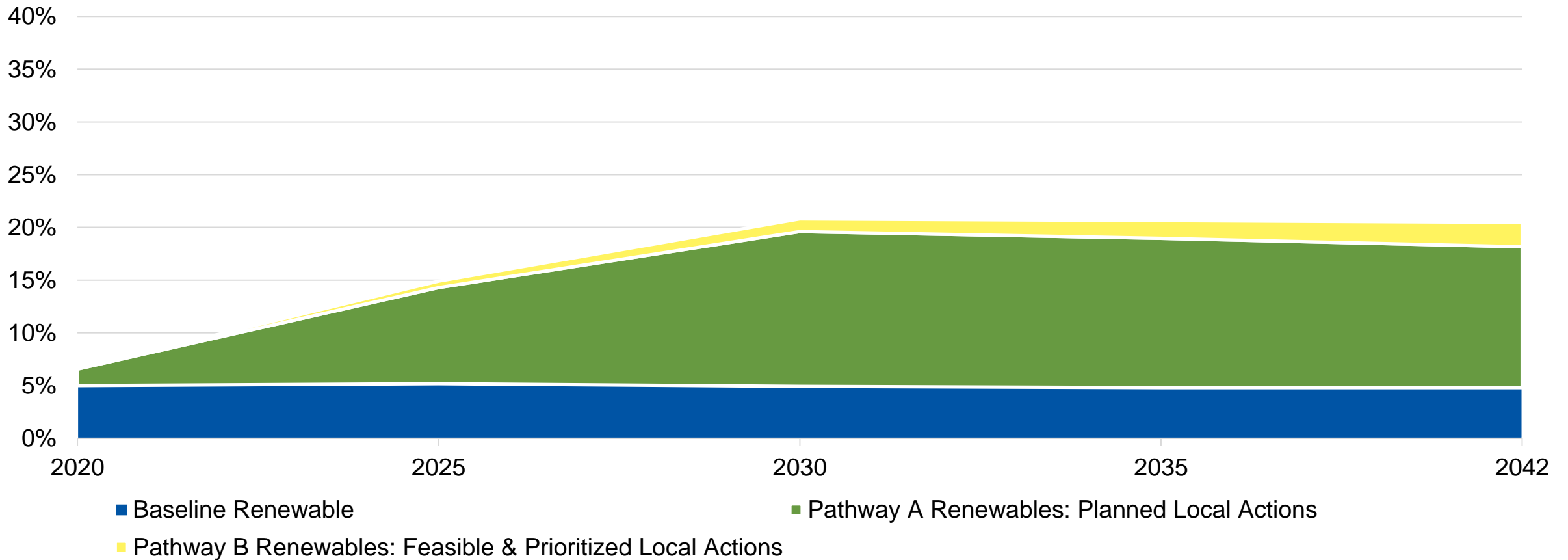
## Strategies identified as high feasibility and high local impact

- Municipalities lease renewable energy projects
- Requiring solar to be installed on all new municipal construction and retrofits
- Implement a community bulk purchasing program (ex. Solarize)
- Set up a local renewable energy revolving loan fund



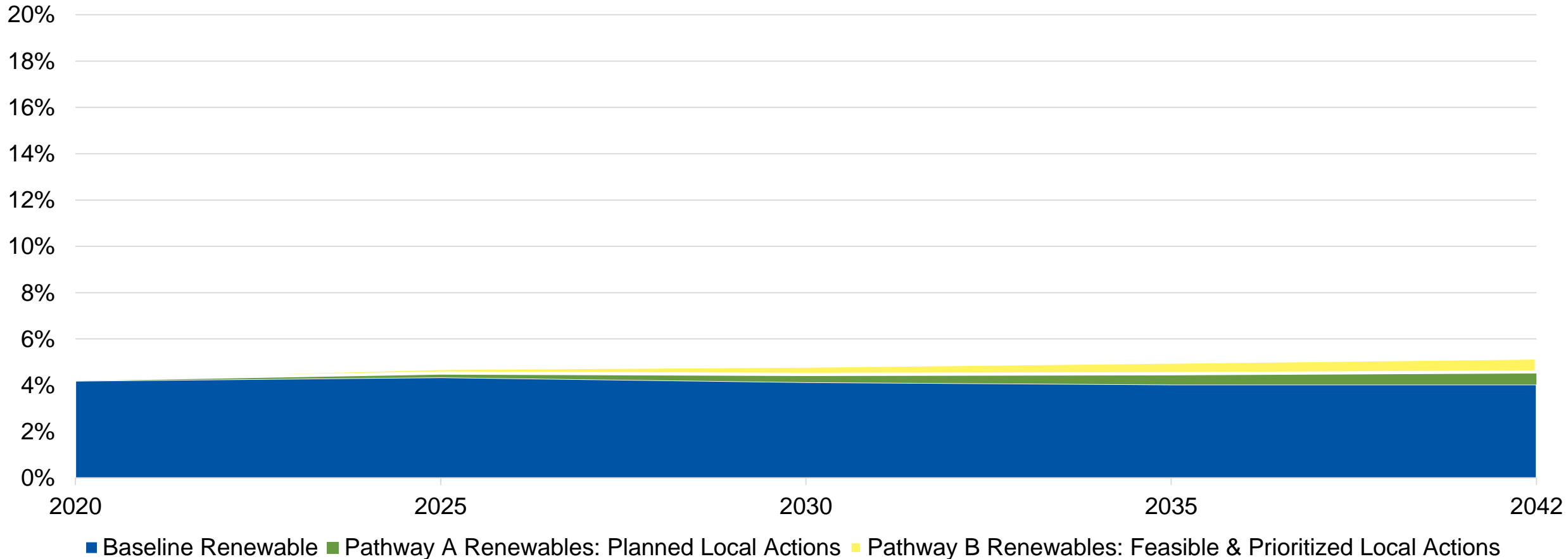
# Pathway B: Impact to Electricity Mix (Municipal)

Municipal Energy Supply Mix with Pathways A and B



# Pathway B: Impact to the Energy Mix (Community-Wide)

Community Energy Supply Mix with Pathways A and B



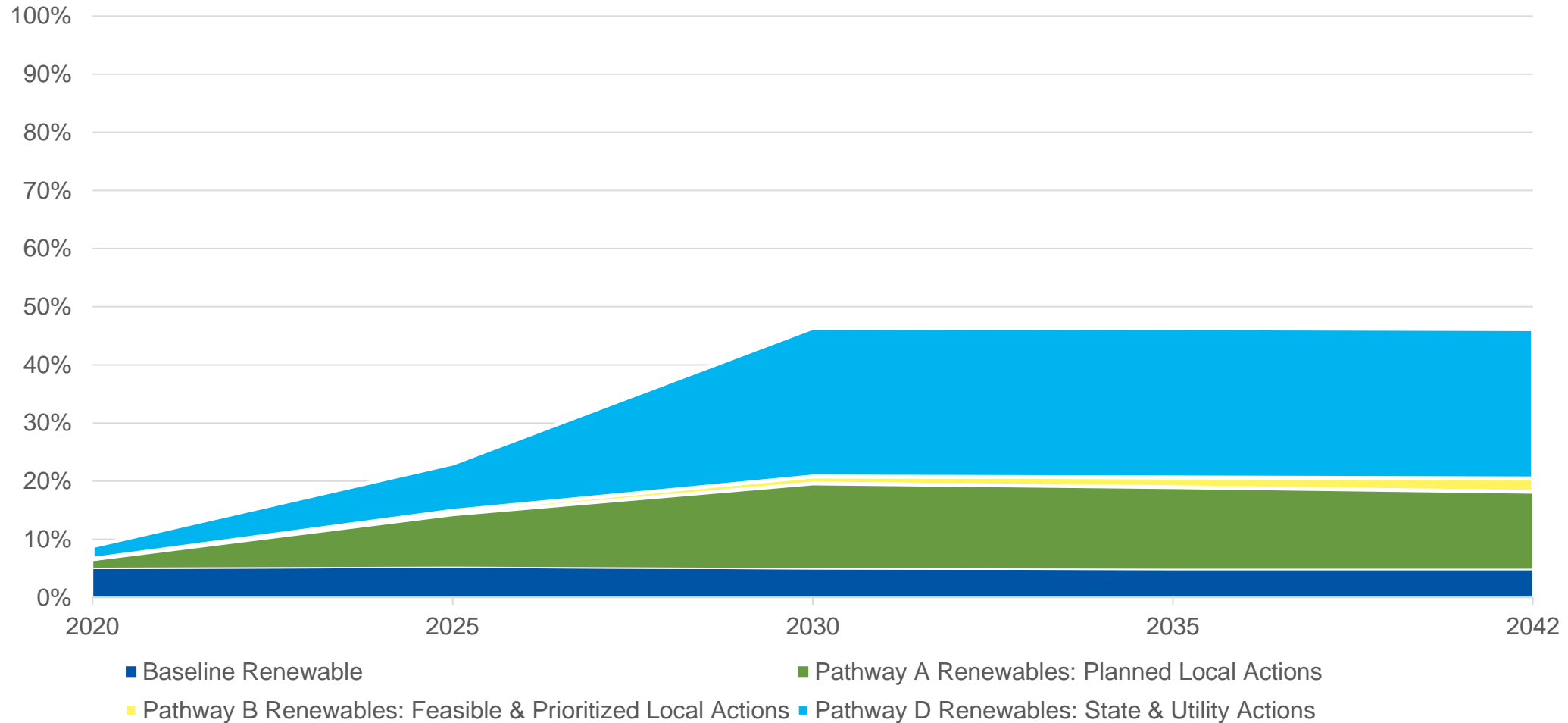
# Pathway D: State Level Policy Changes

## Strategies identified as State Level Policy Changes

- Requiring renewable energy generation on new construction
- Increasing the State Renewable Energy Portfolio Standard
- Allow Third Party Ownership
- Implementing a State Green Bank
- Implementing Community Solar Development

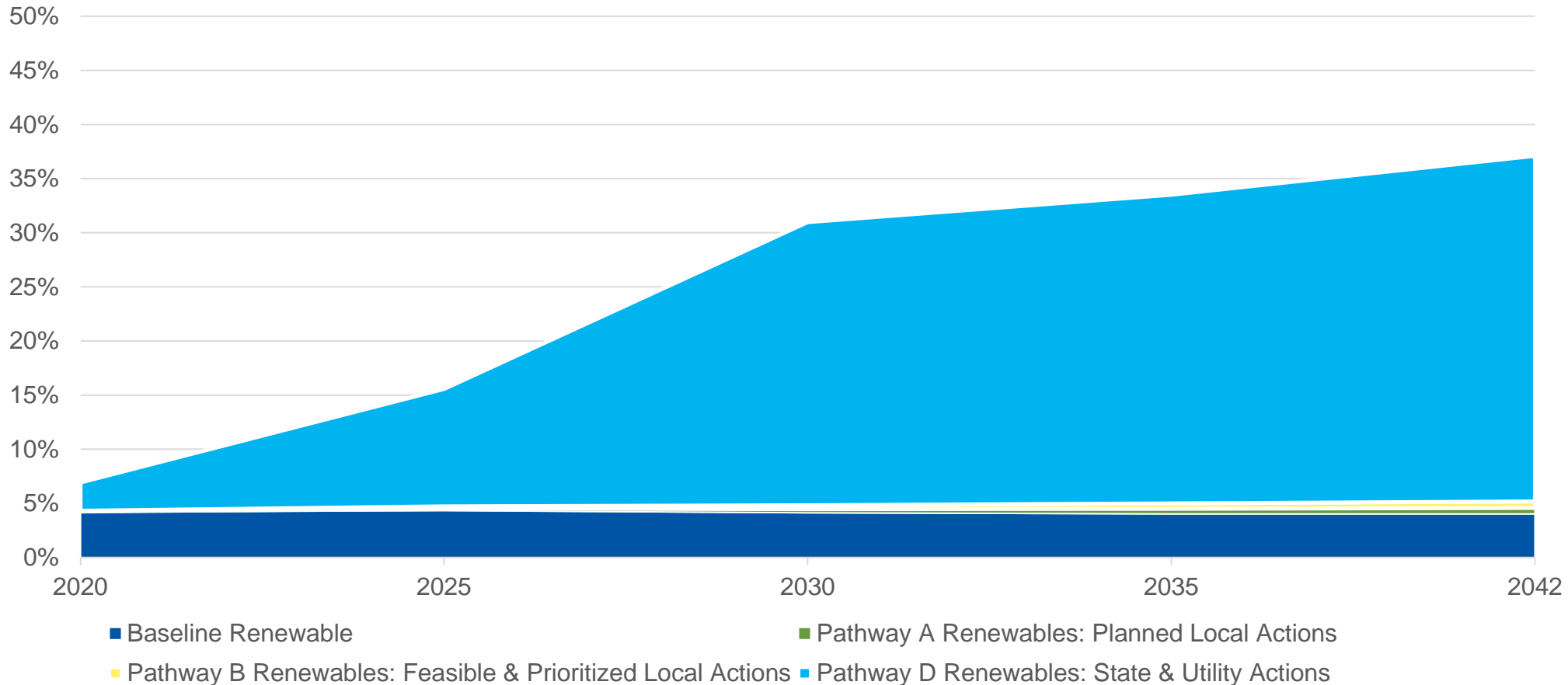
# Pathway D: Impact to Energy Mix (Municipal)

Municipal Energy Supply Mix with Pathways A, B, D



# Pathway D: Impact to the Energy Mix (Community-Wide)

Community Energy Supply Mix with Pathways A, B, D



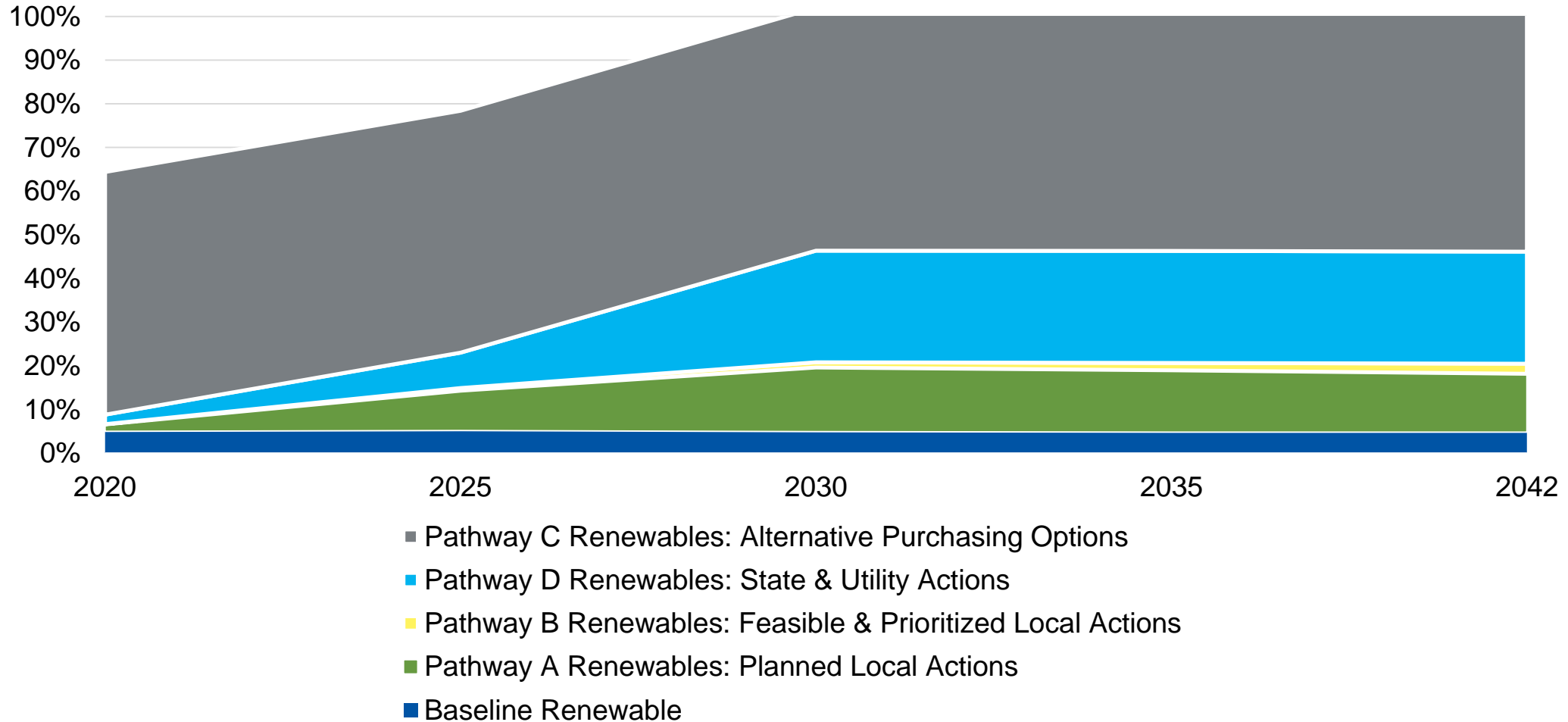
# Pathway C: Alternative Purchasing Strategies

## Strategies identified as alternative purchase options

- Increased REC Purchases (municipal)
- Increased REC Purchases (community)
- PPA Purchasing through Duke (municipal)
- PPA Purchasing through Duke (community)

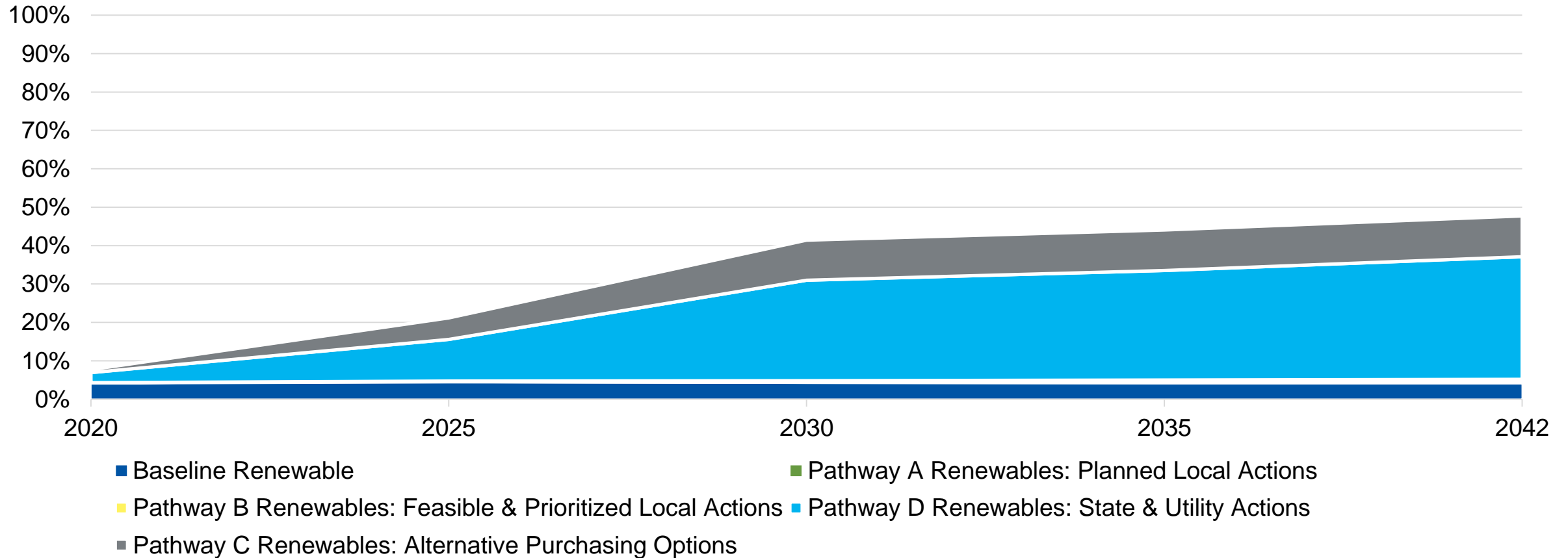
# Pathway C: Impact to Energy Mix (Municipal)

Municipal Energy Supply Mix with Pathways A, B, D & C



# Pathway C: Impact to the Energy Mix (Community-Wide)

Community Energy Supply Mix with Pathways A, B, D & C





# Additional Actions

## Energy Innovation Task Force

- Local Non-Financial Incentive Programs
- Increase municipal taxes to raise revenue
- Community Land Trust
- Create utility-owned or on-bill-financed rooftop solar programs (requires utility collaboration)
- Engage the utility in achieving energy goals by building government-utility relationships

# Additional Actions

## Additional State-Level Policies

- State-level commitment to develop offshore wind (often a MW requirement as part of REPS)
- State-wide Cap-and-trade program

## Soft Strategies

- Education of the larger Buncombe County community to develop understanding of RE – its importance, benefits. Create buy-in and support through the community.
- Local workforce training

# Q&A



# Key Takeaways

# Potential Pathways

Once evaluated against these different categories, **actions were grouped based on these initial findings into potential pathways.**

## Pathway A: Actions already being undertaken by Buncombe County and/or the City of Asheville

- This pathway examines how actions that the **City and County are already taking** or are working to implement might help Buncombe County reach its goals.

## Pathway B: Local Actions Identified as Feasible and High Priority

- This Pathway examines how **local actions** that are seen as **highly feasible** will help the County and City reach their goals.

## Pathway C: Alternative Purchasing Options

- This pathway examines how **renewable energy “purchasing” options** through renewable energy certificates or virtual PPAs may help the County and City reach their goals.

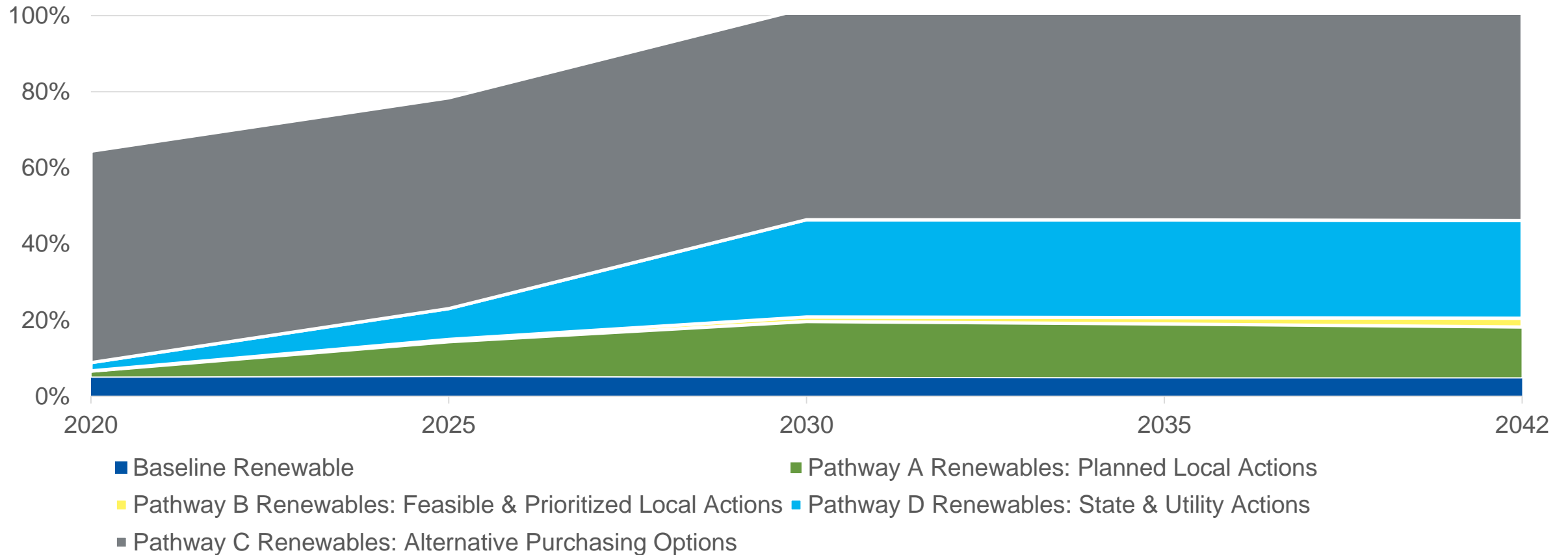
## Pathway D: State/Utility Actions

- This pathway examines how **changes at the state or utility level** may impact the County’s and City’s progress towards their goals.

# Summary of Results (Municipal)

## 100% Renewable Energy in Municipal Operations by 2030

Municipal Energy Supply Mix with All Pathways Implemented



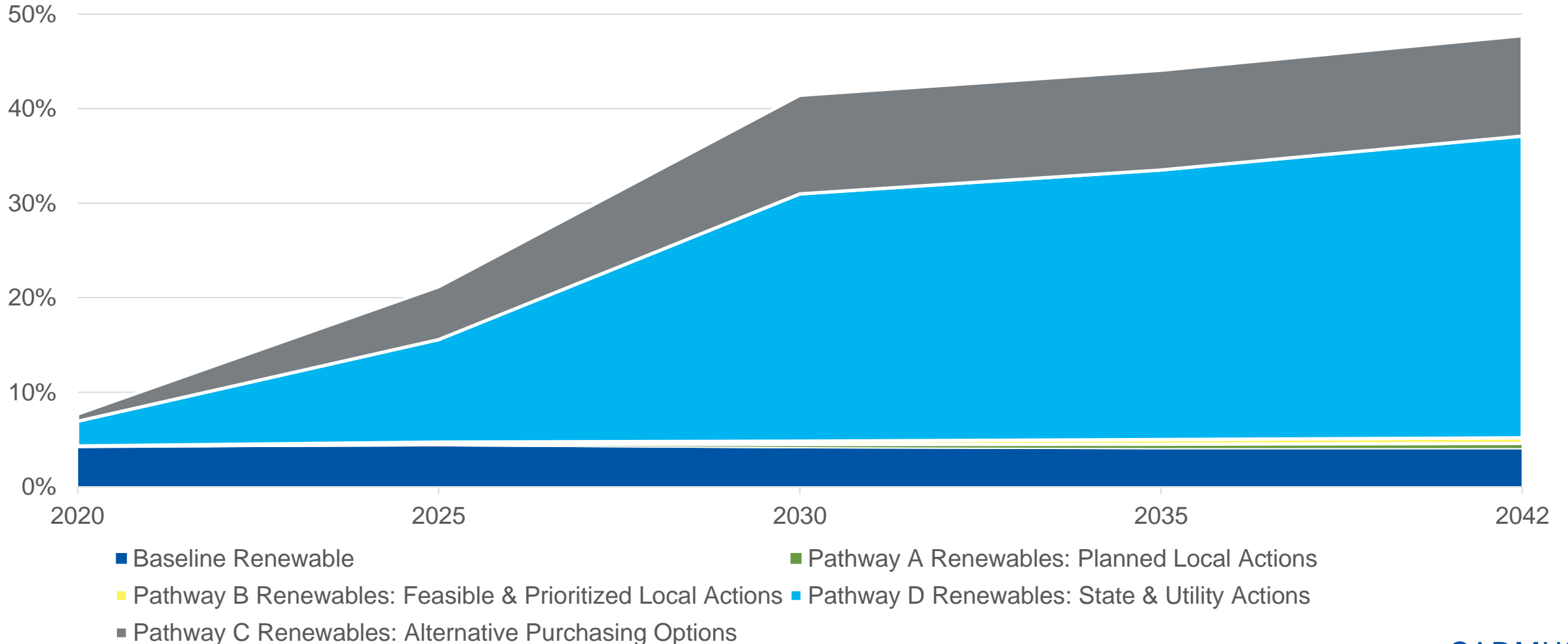
# What this means for the 2030 municipal goals of the City and County

- **Current and local actions can get the City and County about 20% of the way towards their respective goals in their energy mix, up from a current mix of 5%.**
- **Alternative purchasing methods will be a necessary consideration for meeting the 2030 goals.**
- **Investments in renewable heating and cooling technologies will be necessary to meet 2030 goals.**
- **Policy change at the state level and with the utility can greatly impact the overall energy mix of the City and County.**
- **Energy efficiency measures at the City and County levels will help reduce overall energy usage.**

# Summary of Results (Community-Wide)

100% Renewable Energy County-wide by 2042

Community Energy Supply Mix with Each Pathway Implemented





# What this means for the 2042 community-wide goal of the County

- **The County cannot accomplish the community-wide goal alone.**
- **Education and outreach to community members is highly important.**
- **Equity will need to be thought about at every level.**
- **Local renewable energy investments by entities within the community will be necessary.**
- **Local actions may have smaller generation capacity impacts, but have other benefits and can help meet additional community goals.**
- **Policy changes at the state level and with the utility can greatly impact the overall energy mix of the community.**



Q&A



# Results: Direct Actions

# Potential Actions for Buncombe County for 2030

## Ongoing

- Dedicate staff time and resources to monitoring and **engaging in conversations on state-level policies**
- Dedicate staff time and resources to monitoring and **engaging in conversations on utility policies**
- **Lease County-owned property** to utility for renewable energy development
- **Install and directly own renewable energy on County-owned property**
- Continue to **invest in renewable heating, cooling and energy efficiency technologies**

# Direct Actions for Buncombe County for 2030

## Near-Term

- Adopt internal policy **requiring renewable energy installations on County-owned property** during new construction or major renovations.
- Work with other entities to install renewable energy through an **aggregated procurement**

## Medium-Term

- Implement a **Revolving Investment Program** for Renewable Energy on County-Owned Property

## Long-Term

- Purchase **renewable energy credits (RECs)**
- Explore opportunities **for virtual power purchase agreements**

# Buncombe County 2030 Pathways

- **Ongoing County investments in renewable energy, energy efficiency, and renewable thermal technologies** at its facilities can help the County **immediately begin making progress** towards the County's 2030 municipal goal.
- In the **near-term**, the **County should consider mechanisms** such as aggregated procurement and an internal renewable energy requirement on new construction and renovations at County facilities as **mechanisms by which to install more onsite renewable energy**.
- **Medium-term**, the County could consider **implementing and seeding an internal green investment fund** to help departments and facilities **fund the necessary investments**.
- **Purchasing of renewable energy certificates is a medium-long term option** as it has not been immediately prioritized by stakeholders.
- **State level policies**, which the County has **less direct control** over, could potentially be the most **impactful way to change the energy mix**. These changes and the timeline to implement them are **not guaranteed**. The County should consider engagement with the state and utility on an **ongoing basis**.

# Direct Actions for the City of Asheville for 2030

## Ongoing

- Dedicate staff time and resources to monitoring and **engaging in conversations on state-level policies**
- Continue to support the **Revolving Investment Program** for RE, EE investments internally
- Dedicate staff time and resources to monitoring and **engaging in conversations on utility policies**
- **Lease City-owned property** to utility for renewable energy development
- **Install and directly own renewable energy on City-owned property**
- Continue to invest in **renewable heating, cooling and energy efficiency technologies**

# Direct Actions for the City of Asheville for 2030

## Near-Term

- Adopt internal policy **requiring renewable energy installations on County-owned property** during new construction or major renovations.

## Medium-Term

- Work with other entities to install renewable energy through an **aggregated procurement**

## Long-Term

- Purchase **renewable energy credits (RECs)**
- Explore opportunities for **virtual power purchase agreements**



# City of Asheville 2030 Pathways

**Similar to Buncombe County, the City can consider the following:**

- **Ongoing City investments in renewable energy, energy efficiency, and renewable thermal technologies** at its facilities can help the City **immediately begin making progress** towards its 2030 goal. These actions are seen as being highly local, with high environmental benefits, and demonstrate leadership.
- In the **near-term and medium-terms**, the **City could consider** aggregated procurement and an internal renewable energy requirement on new construction and renovations at City facilities as **mechanisms by which to install more onsite renewable energy**.
- **Purchasing of renewable energy certificates is a medium-long term option** as it has not been immediately prioritized by stakeholders and demonstrates less leadership with less community engagement and local impacts.
- **State level policies**, which the City has **less direct control** over, could potentially be the most **impactful ways to change the energy mix**. These changes and the timeline to implement them are **not guaranteed**. The City should consider engagement with the state and utility on an **ongoing basis**.

# Direct Actions for Buncombe County for 2042

## Ongoing

- Dedicate staff time and resources to monitoring and engaging in conversations on state-level policies
- Dedicate staff time and resources to monitoring and engaging in conversations on utility policies
- Lease County-owned property to utility for renewable energy development
- Enter into solar lease agreements on County-owned land
- Host a renewable energy bulk purchasing program for County residents and businesses
- Provide resources, tools, and education to community members on RE, EE, and transportation
- Work with area nonprofits and universities to establish workforce training for RE and EE

# Direct Actions for Buncombe County for 2042

## Near-Term

- Reduce permitting, zoning, and inspection barriers to RE
- Work with other entities to install renewable energy through an **aggregated procurement**

## Medium-Term

- Adopt legislation requiring renewable energy installations on new construction or during capital improvement projects County-wide where feasible.

## Long-Term

- Implement a **Revolving Loan Program** for residents and businesses
- Encourage residents and businesses to purchase renewable energy credits (RECs)
- Explore opportunities for aggregated virtual power purchase agreements

# Buncombe County 2042 Pathways

- **The County can provide ongoing support to the community on renewable energy, energy efficiency, and renewable thermal technology investments through education, trainings, workshops, and outreach materials.** These resources can focus on how to install renewable energy, financing options, and metrics tracking.
- In the near term and ongoing, the County can encourage onsite renewable energy generation within the County by supporting an **aggregated procurements, and bulk purchasing programs, and solar leasing.**
- **Medium-term**, the County could consider **implementing and seeding a revolving loan fund for residents to help fund investments in renewable energy.**
- **State level policy changes could help provide the community with more means to meet their goals.** Continued engagement with the EITF, utilities, and state level conversations could help move the needle in the long-term on making this goal achievable.

# CADMUS

Q&A



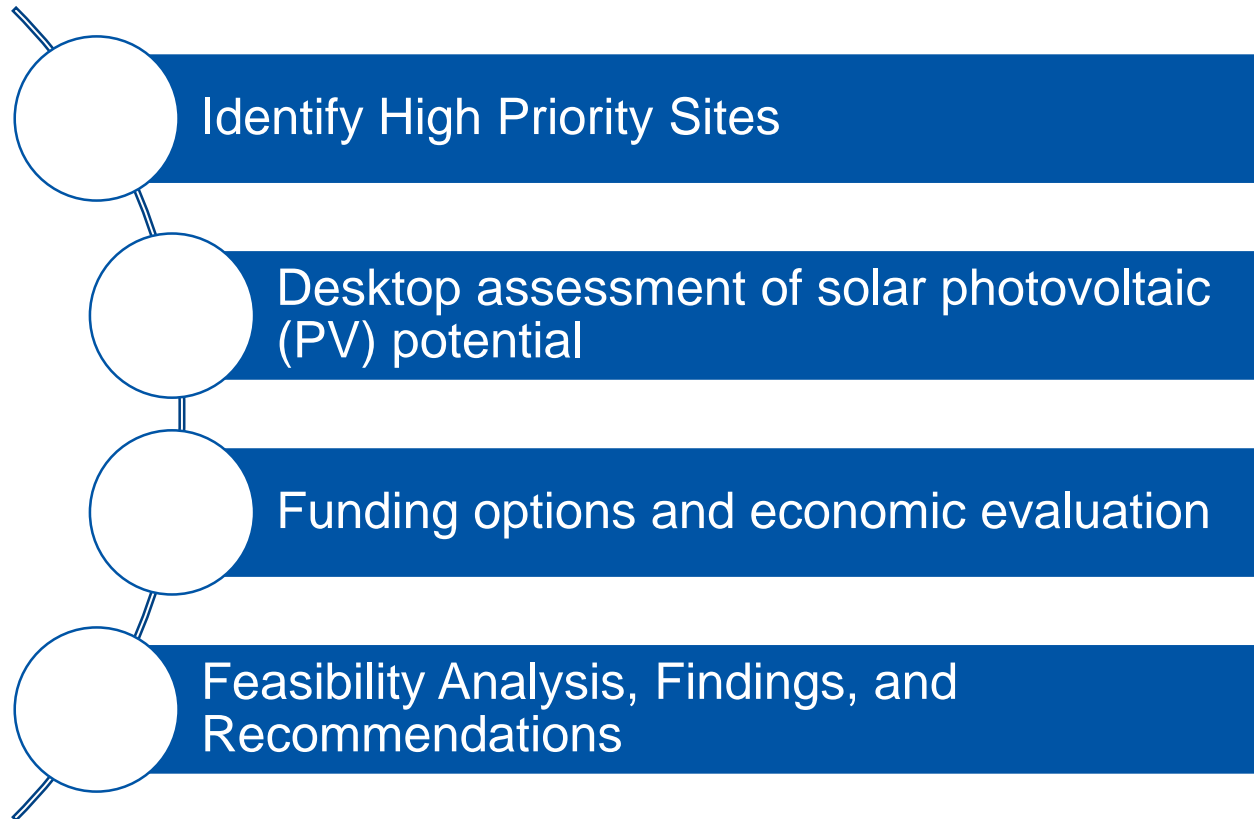
# Small Group Discussions

# CADMUS

June 3, 2019

## Buncombe County Facilities Renewable Energy Feasibility Evaluation Update







## Asheville

- 14 Riverside Drive
- Burton Street Community Center
- Civic Center Parking Deck
- Dr. Wesley Grant Sr. Southside Community Center
- Fire Station #5
- Lynwood Crump Shiloh Center
- Mills River Water Treatment Plant
- Municipal Building
- Public Works Building A
- US Cellular Center
- Wall Street Parking Deck

## Buncombe County

- West Asheville Library
- North Asheville Library
- Leicester Crossing
- New Social Service Building
- Facilities Department
- New Training Center
- Soccer Complex
- Trans & Garage
- College Street Parking Deck

- Each site was assessed for the applicability of Ground Mounted, Rooftop, and Canopy/Carport PV Systems
- Technical Analysis
  - Review satellite imagery and site drawings for shading issues, obstacles, interconnection considerations
  - Determine if projects will be in the proximity of endangered species' habitats or wetlands
  - Helioscope energy production and modeling results
- Economic Analysis
  - Electricity cost savings
  - Incentive Structure monetization options
  - Ownership Benefit Analysis
    - Direct Ownership
    - Third Party Ownership

## Direct Ownership

- County buys system outright from an installer
- More expensive capital costs due to ITC
- Potentially better ROI
- County pays O&M costs

## Third Party Ownership

- County continues to pay utility for electricity
- Developer pays land or building lease to County
- Developer owns, operates, and maintains each System

- Federal Investment Tax Credit (ITC)
  - 30% of total capital costs
  - Cannot be monetized by the County – only applicable in PPA financing model
- Duke Solar Rebate
  - \$0.75/kW installed
  - Capped at \$75,000 per system
  - Monetized by either the County or a Third Party Developer
- Operations and Maintenance Costs
- Bonding Fees
- Capital Costs from \$2.15-\$2.75/W, depending on mounting mechanism

# Site Layouts

## College Street Parking Deck



## Coxe Ave Gymnastics Facility

Site Name	kW-DC	kWh	GHG Reductions (appx tons of CO2)
14 Riverside Drive	118	178,900	125.23
Burton Street Community Center	22	28,500	19.95
Civic Center Parking Deck	127	181,200	126.84
Dr. Wesley Grant Sr Southside Community Center	26	38,250	26.775
Fire Station #5	18	26,500	18.55
Lynwood Crump Shiloh Center	89	134,400	94.08
Mills River Water Treatment Plant	471	713,600	499.52
Municipal Building	129	187,300	131.11
Public Works Building	39	46,200	32.34
US Cellular Center	439	650,500	455.35
Wall Street Parking Deck	133	198,700	139.09
West Asheville Library	73	109,500	76.65
Leicester Crossing	241	362,400	253.68
Gymnastics Facility	118	176,700	123.69
New Social Service Building	163	244,350	171.045
Facilities Department	79	118,050	82.635
North Asheville Library	33	49,950	34.965
New Training Center	76	114,300	80.01
Soccer Complex	52	78,150	54.705
Trans & Garage	301	450,750	315.525
College Street Parking Deck	206	309,150	216.405
<b>Totals</b>	<b>2,953</b>	<b>4,397,350</b>	<b>3,078</b>



# Appendix

# Background Information

**County and City governments in North Carolina historically had little control over electric power, due to ...**

- **Limited supply choices.** In a “regulated” state, customers generally have little ability to determine their power mix or electricity provider.
- **A state-focused industry.** Electric regulation and policy typically happens at the state, not local level (except for the case of municipal utilities).
- **Limited “hard power.”** Formal authorities of counties and cities typically have control over areas including permitting, planning, and zoning, which provide few ways to impact electricity supply.



# Background Information

**Although counties and cities still don't have full control over electric power, recent changes in North Carolina State Law have encouraged state, county and city level, and private actors (i.e., the utilities) to lower GHG emissions and transition to renewable energy.**

**These state policies provide a supportive environment for counties and cities to have more choice regarding their electric power, and include...**

- **Renewable Energy and Efficiency Portfolio Standard (REPS).** Requires IOUs to supply 12.5% of 2020 retail electricity sales in NC from eligible energy sources by 2021.
  - Duke can meet up to 25% of its REPS requirement with out-of-state RECs. Additionally, Duke can currently meet up to 25% of its requirement with energy efficiency measures. This EE % increases to 40% in 2021.
- **GHG Targets and Climate Plan → Executive Order 80.** NC has committed to reducing GHG emissions to 40% below 2005 levels, to increase the number of zero emission vehicles to at least 80,000, and to reduce energy consumption per square foot in state-owned buildings by at least 40% from 2002-2003 levels.
- **Other Renewable Energy Policies.** Solar panel leasing program; rooftop solar rebate program; direct procurement of RE program; community solar; net metering; energy efficiency and consumption standards for state-owned buildings.

# Background Information

## Actions already taken by the County

- **Renewable Energy Resolution.** Requires the utilization of 100% renewable energy for county operations by 2030, and the utilization of 100% renewable energy for the entire county by 2042.
- **Clean Energy Projects.** Using funding leveraged from EITF (below), the County has facilitated energy efficiency and weatherization upgrades for low-income citizens.

## Joint County/City Actions

- **Creation of the Energy Innovation Task Force (EITF).** EITF is a public-private partnership comprised of the County, City, Duke Energy, and other community stakeholders.
- **Blue Horizons Project.** Formed through the EITF to promote energy efficiency throughout the county.

## Actions already taken by the City

- **Renewable Energy Resolution.** Requires the City to transition municipal operations from fossil-fuel based energy sources to renewable energy by Dec. 31, 2030, and for the Office of Sustainability to develop a renewable energy plan.
- **Carbon Emission Reduction Goals and LEED standards.** Implements a target of 80% municipal carbon footprint reduction by 2050 from a 2008 baseline.
- **Building Permit Fee Rebates.** Provides rebates for building permits and plan reviews for certain renewable energy technologies and green building certifications for homes and mixed-use commercial buildings

# North Carolina's Renewable Energy mix

Supply Source	North Carolina Energy Mix
Hydroelectricity	4%
Coal	27%
Natural Gas	30%
Solar	4%
Wind	<1%
Petroleum	<1%
Nuclear	33%
Biomass	2%
<b>Total</b>	<b>100%</b>

Source: NC DEQ 2017 GHG Inventory Report

\* Providing NC data pending availability of Buncombe County data from Duke Energy

# Possible ways for the county and city partners to take action

- Use of **County/City resources** to act locally
- Use of **County/City authority** to require local action
- **Collaboration with other parties** (such as other counties) to act regionally or statewide
- **Engagement of state government** to take steps to allow for greater county action
  - Could entail legislators, regulators, or agency staff
- **Engagement of utilities** to create new programs and policies
  - Municipalities partner on pilot programs, and other initiatives

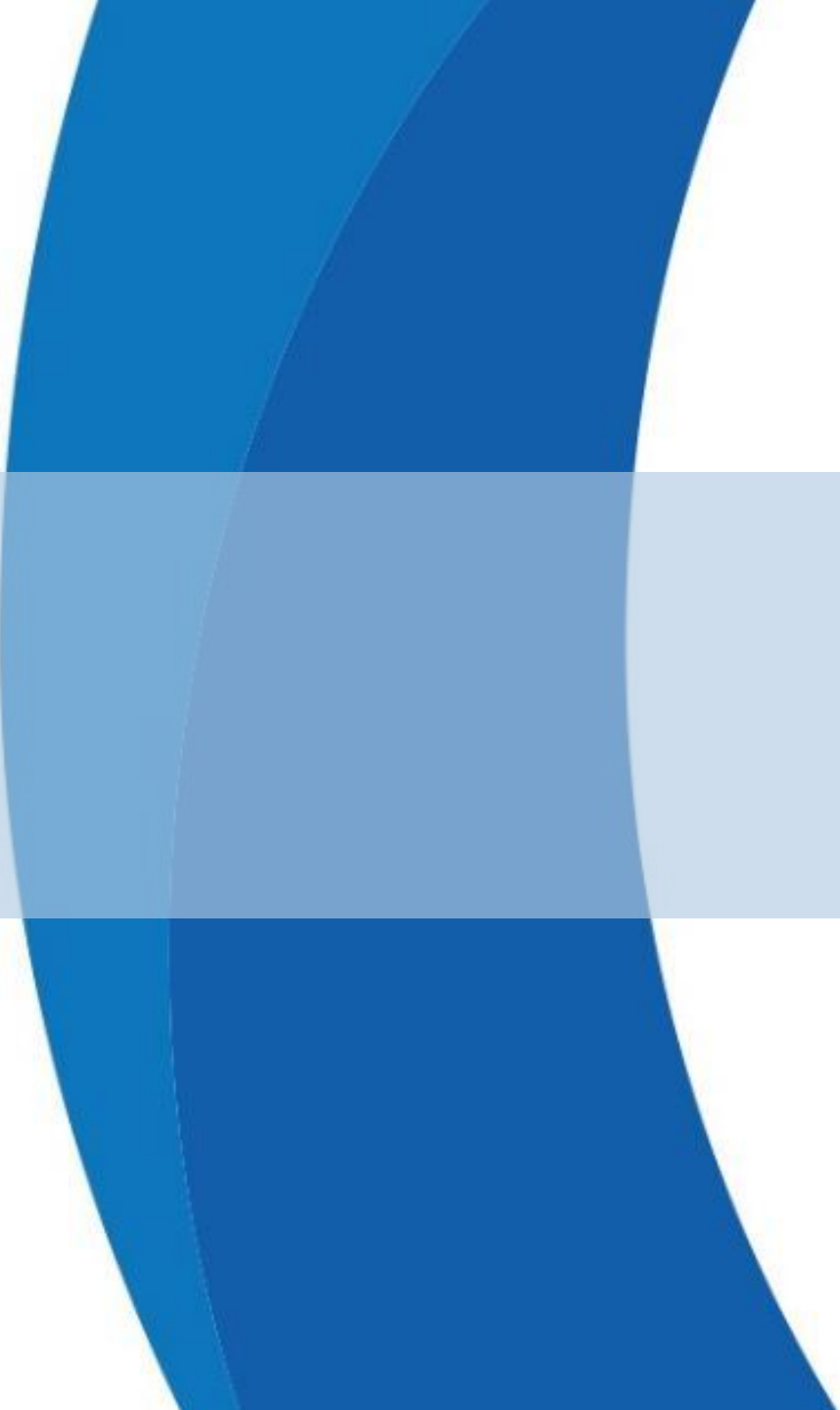
# Project goals and approach

- **Current Status:**

- **Policy Research** - The project team has conducted preliminary policy research to inform the workshops.
- **Data Request** - The project team has been working with Duke Energy to procure data necessary for the renewable energy scenario modeling.
- **Workshop Preparations** - The project team designed the workshops, the county and city have created a list of invitees, and the project team has conducted intake interviews with advisory group members.

- **Stakeholder Process**

- **Today's meeting** – The project team will introduce the project and provide stakeholders the opportunity to share initial thoughts and directional feedback to the project team.
- **A final stakeholder briefing** – The project team will provide an update on the results of the work and final report, targeted for May 2019.



# Part 2: Renewable Energy Impacts

Buncombe County and the City of Asheville –  
Renewable Energy Transition Planning

# Impacts to consider in reaching renewable energy goals

- The County and City must balance different criteria:
  - Increased renewable energy capacity
  - Environmental impacts
  - Equity impacts
  - Financial impacts
- These can present important tradeoffs that the County and City should consider.

# Impacts to consider in reaching renewable energy goals

If the County/City prioritizes...	A renewable energy policy may involve...
Increased local renewable installed capacity.	Strategies that encourage or require local renewable energy production, which may sacrifice scale of impact or project economics.
Increased overall renewable energy production.	Strategies that provide for large-scale purchases of renewables energy, presumably including substantial out-of-county resources.
A renewable energy transition that causes minimal environmental impacts	Strategies that focus on renewable energy production such as solar, rather a more mixed portfolio that could otherwise include options such as wind or nuclear production.
An equitable renewable energy transition.	A focus on local programs, job creation, and a reduction of income-related market barriers. This may result in a smaller increase in capacity than other strategies.
Financial savings to the county and its residents/businesses.	Targeted installation or participation in renewable energy purchasing programs that offer financial benefits, and would likely sell any RECs obtained.



# Key questions to inform the renewable energy transition plan

- What are the main goals in its renewable energy transition?
  - (e.g. local impact, ease of implementation, affordability, equity and social justice, etc.)
- What types of purchases or policies does the County/City consider “renewable”?
- Is it important that the County/City own and retire RECs?
- Does it matter where the power is produced?
- Would the County/City’s priorities or renewable energy target change in a scenario with large-scale thermal or vehicle electrification?



# Discussion: Priorities for Renewable Energy

Buncombe County and the City of Asheville– Renewable  
Energy Transition Planning

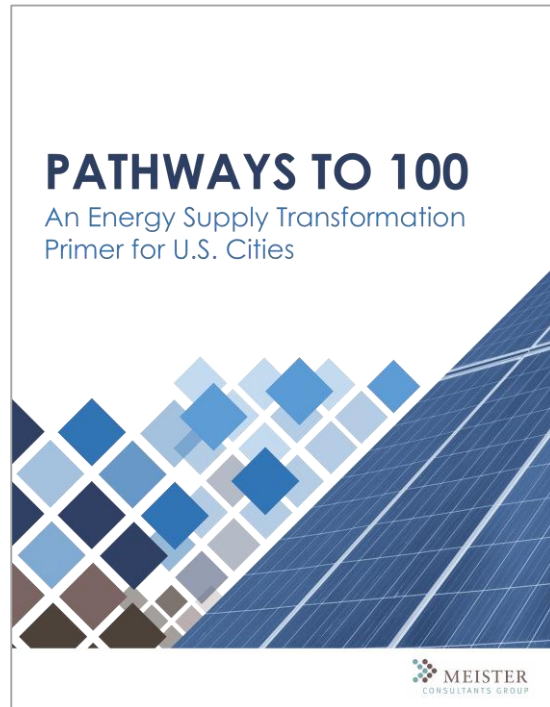


# Part 3: Policy and Program Levers and Options

Buncombe County and the City of Asheville – Renewable  
Energy Transition Planning

# Potential Policies and Programs

Preliminary set of policy ideas are drawn from the *Pathways to 100 Report* and fall into three broad categories



- **Direct county or city action**
  - Generally has the greatest capacity to act, but the most limited scale of impact
- **Collaboration with state or utility actors to grow markets**
  - Greatest opportunities for policy action, but reliant on action of others
- **Expanding purchasing options within the county**
  - Options vary in terms of impact and accessibility, would still require residents and business to act

# Background: What does “buying renewable energy” look like?

## Direct Installation and Ownership

County, City, or its residents/businesses install and own renewable energy projects in the county.

This could involve either selling or retiring the associated RECs.

## Power Purchase Agreements (PPAs)

County, City, or its residents/businesses sign contracts for power with renewable energy developers.

North Carolina law currently does not permit third party PPAs. The County or City would need to lobby the State legislature to enable this option.

## REC-Based Purchasing

County, City, or its residents/businesses arrange for the purchase and retirement of the underlying RECs of renewable energy projects, without purchasing the associated power.

This will always entail a premium over normal power purchasing.

## Virtual PPAs

# Background: What does “buying renewable energy” look like?

## **Wait, What’s a Virtual PPA?**

Virtual PPAs are tools for customers in regulated contexts to mimic a traditional PPA with a competitive suppliers.

# Potential policies and programs

Category	Description	Anticipated Power Mix Impact	Level of Effort	Example (if needed)
Using county or city action and powers to support local projects	Install renewable energy projects on all county/city facilities	Low	Easy	
	Lease county/city land for renewable energy	Low	Easy	
	Establish city requirements for on-site renewable energy (e.g., solar installation requirements)	Medium	Medium	City of Seattle
	Reduce permitting, zoning, and inspection time and costs for renewable energy	Medium	Medium	Philadelphia, PA
	Establish renewable energy purchasing requirements for city buildings	Medium	Medium	
	Establish energy efficiency standards for all county/city facilities	Low	Easy	
	Establish energy efficiency standards in local zoning code and permitting requirements	Low	Medium	
Accessing and utilizing RE purchasing options	Partner with the utility and/or third-party to procure renewable energy	Low	Easy	Austin, TX
	Purchase renewable energy on-site to supply city operations (e.g. on-site solar)	Low	Easy	

# Impact on renewable energy requires effort

Power Mix Impact	High			
	Medium		<ul style="list-style-type: none"> <li>Establish city mandates for on-site renewable energy</li> <li>Reduce permitting, zoning, and inspection time and costs for renewable energy</li> <li>Establish renewable energy purchasing requirements for city buildings</li> </ul>	
	Low	<ul style="list-style-type: none"> <li>Install RE at County Facilities</li> <li>Lease County Lands for Large RE</li> <li>Partner with the utility and/or third-party to procure renewable energy</li> <li>Purchase renewable energy on-site to supply city operations (e.g. on-site solar)</li> <li>Establish energy efficiency standards for all county/city facilities</li> </ul>	<ul style="list-style-type: none"> <li>Establish energy efficiency standards in local zoning code and permitting requirements</li> </ul>	
		Easy	Medium	Hard
		Level of Effort		

*This matrix is intended to be preliminary and informative only, and does not account for goals beyond program scale (such as local control, equity impacts, etc)*





# Discussion: Policy and Program Identification

Buncombe County and City of Asheville – Renewable Energy  
Transition Planning

# Wrap-up and prep for Thursday stakeholder meeting

- Following this discussion, what (if any) information would you like to report out to the stakeholder group regarding...
  - Priorities for a renewable energy transition plan?
  - Potential scenarios or sets of strategies to investigate?
  
- Next Steps

## Thank You

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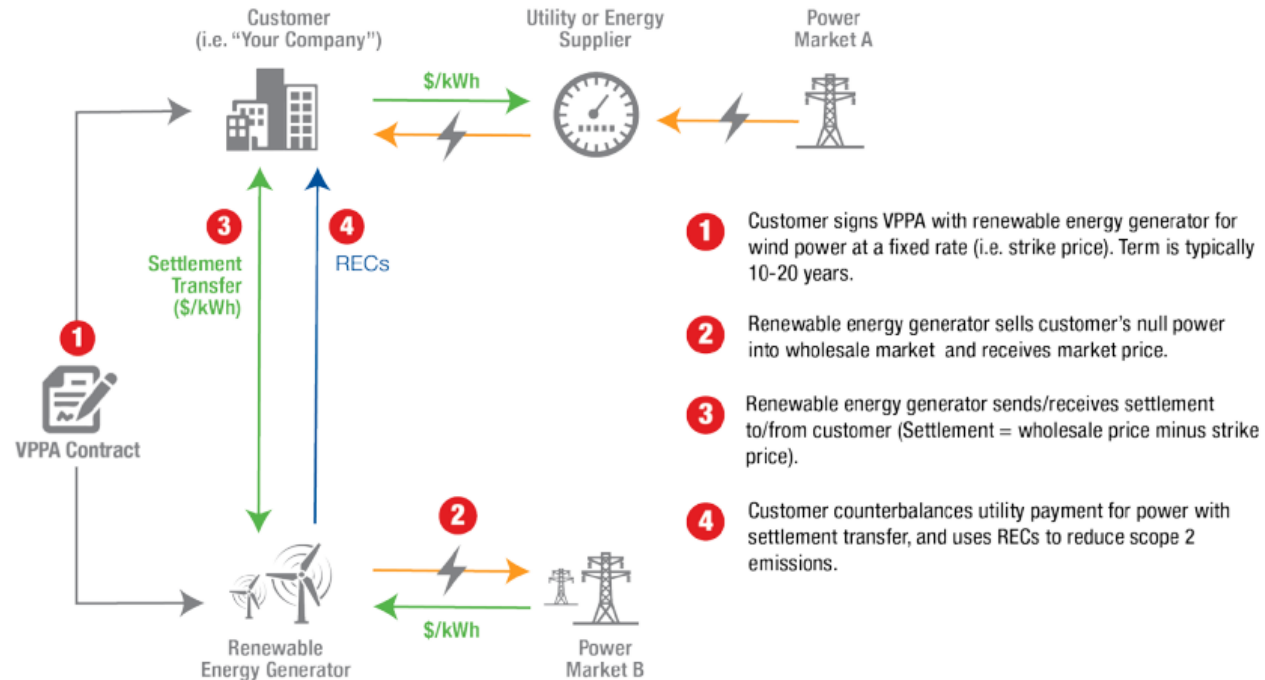
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# What does “buying renewable energy” look like?

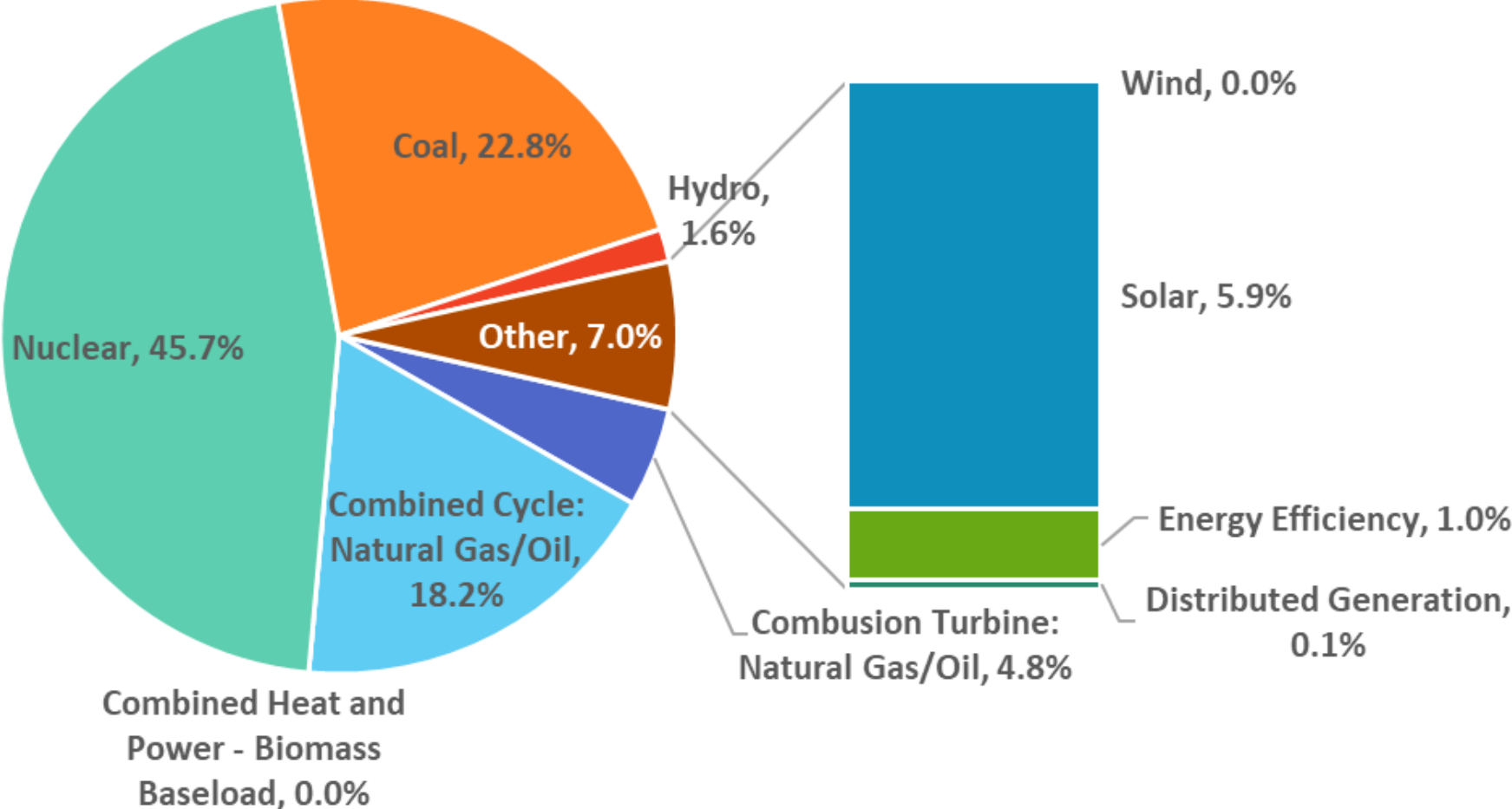
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Virtual PPAs are tools for customers in regulated contexts to mimic a traditional PPA with a competitive suppliers.



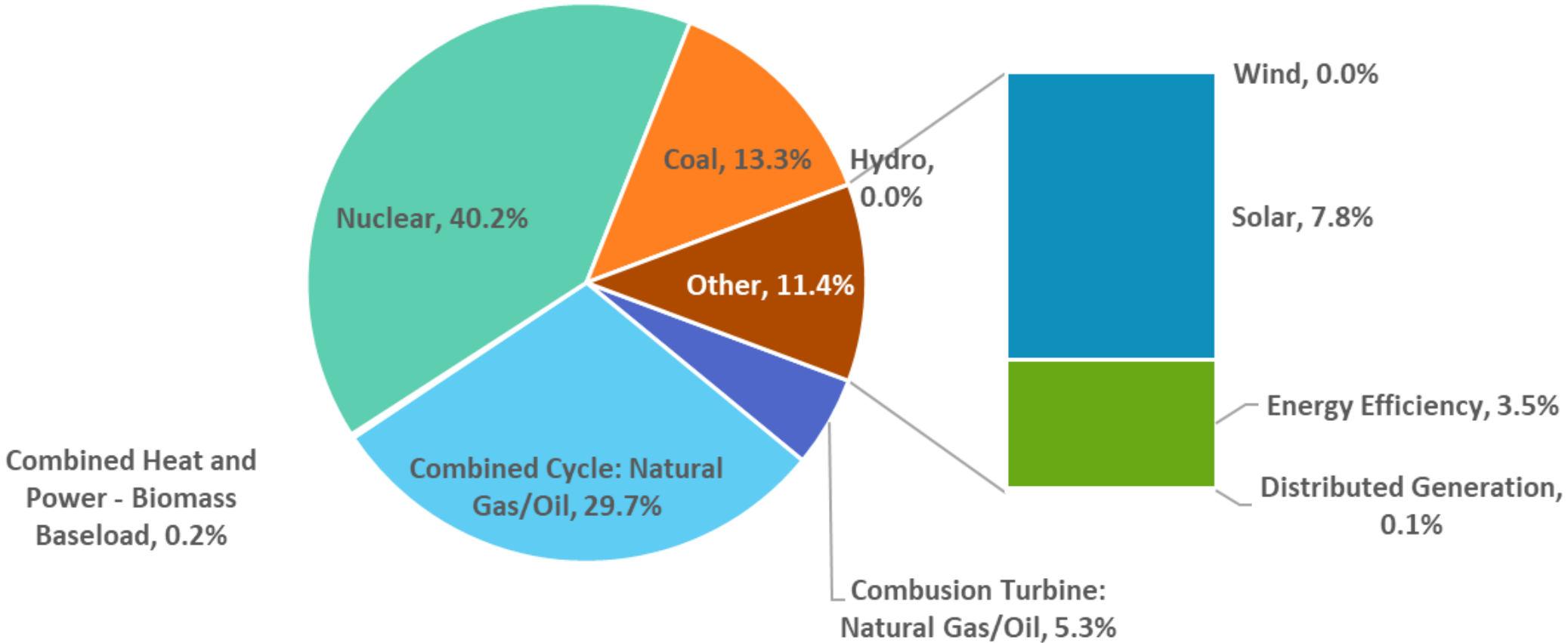
# 2019 Baseline Electricity Supply Mix

2019 DEP + DG Power Mix



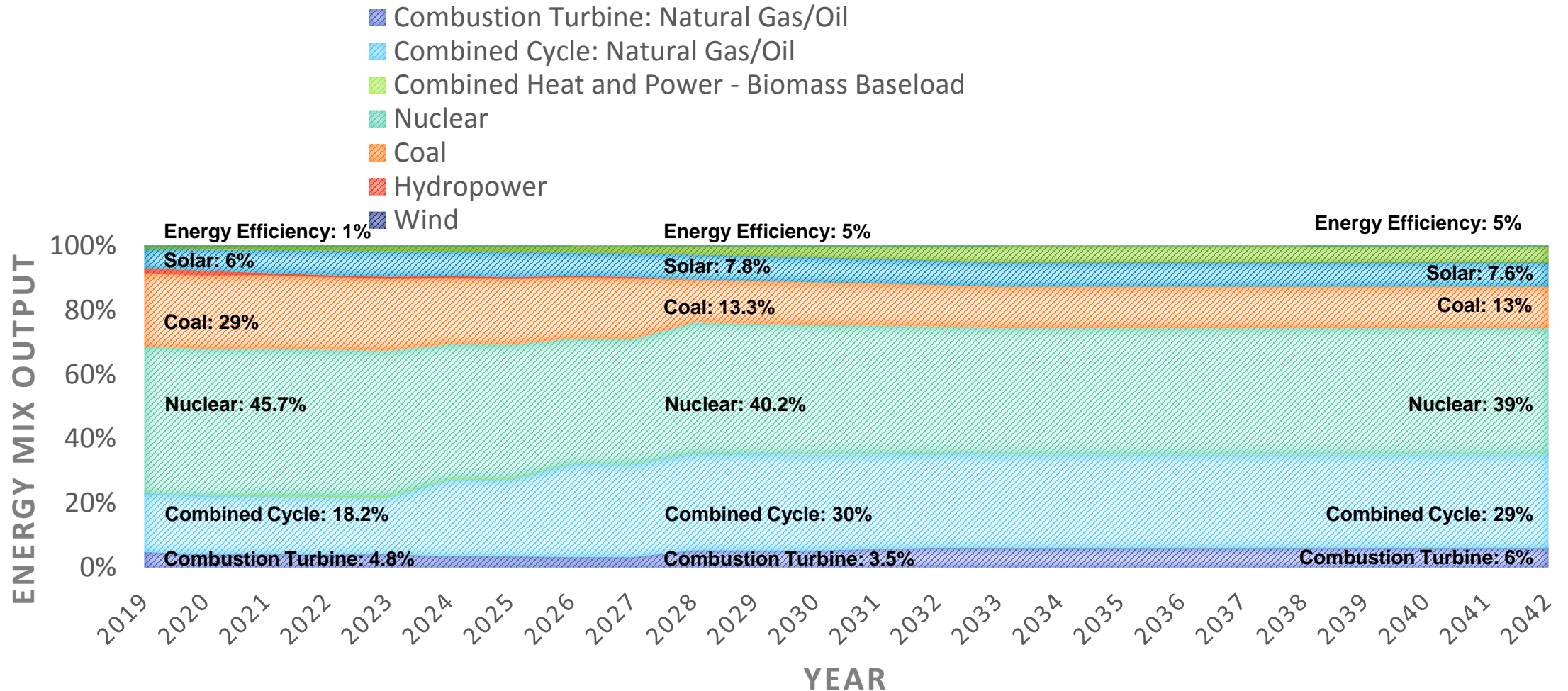
# 3. 2030 Baseline Power Mix

2030 DEP + DG Power Mix

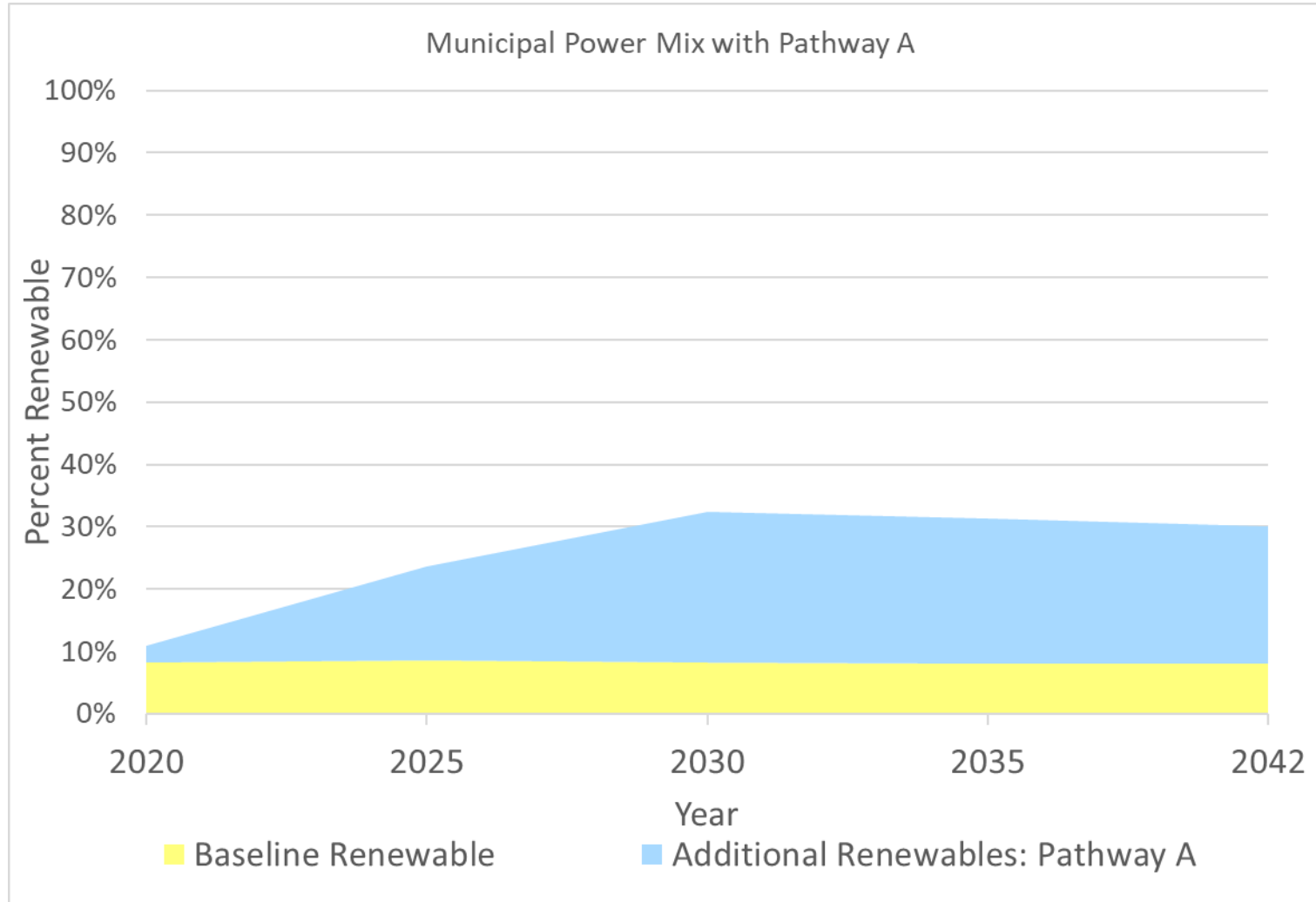


# 3. 2019-2042 Baseline Power Mix

POWER MIX FOR DEP CUSTOMERS: 2019 - 2042

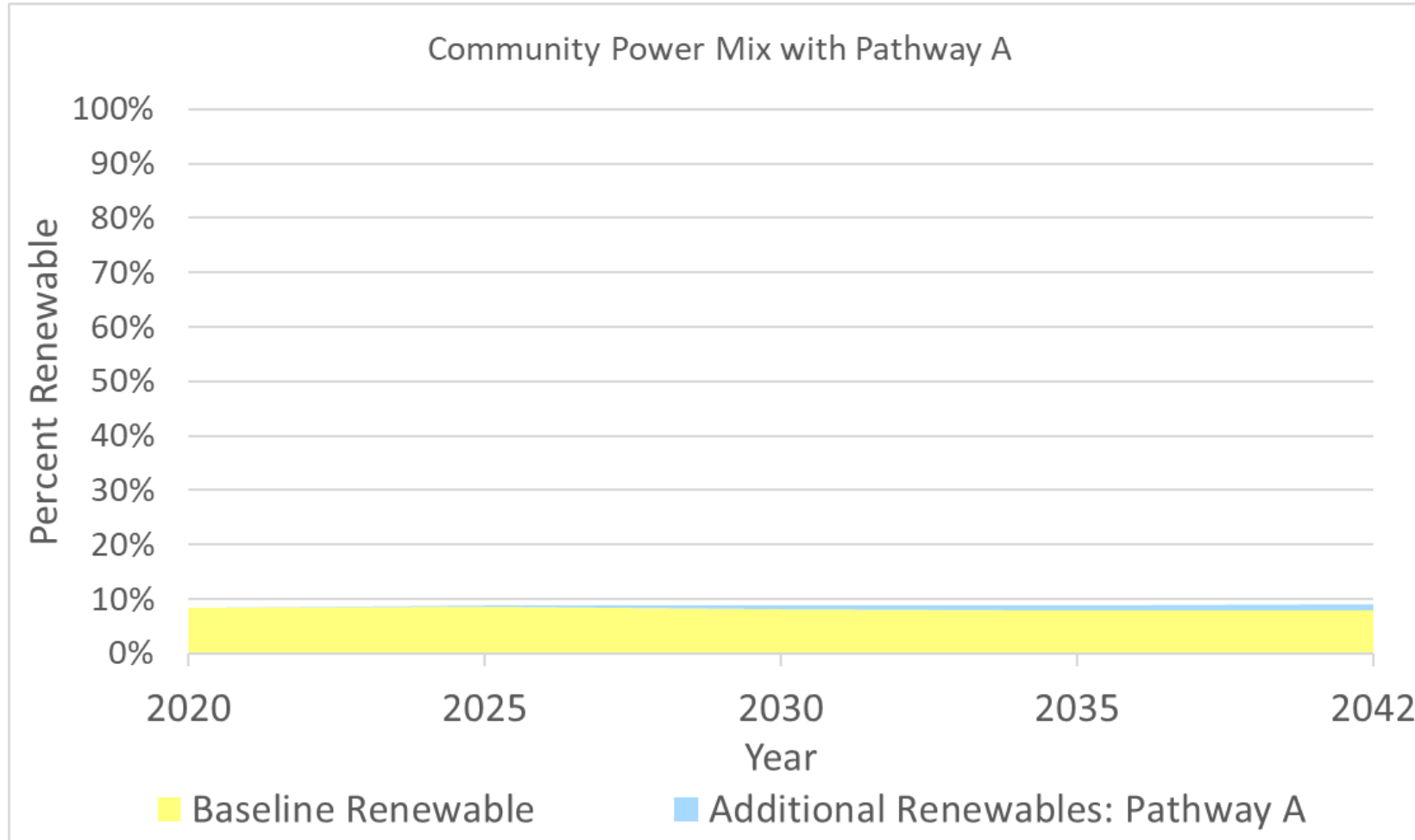


# Pathway A: Impact to Electricity Mix (Municipal)

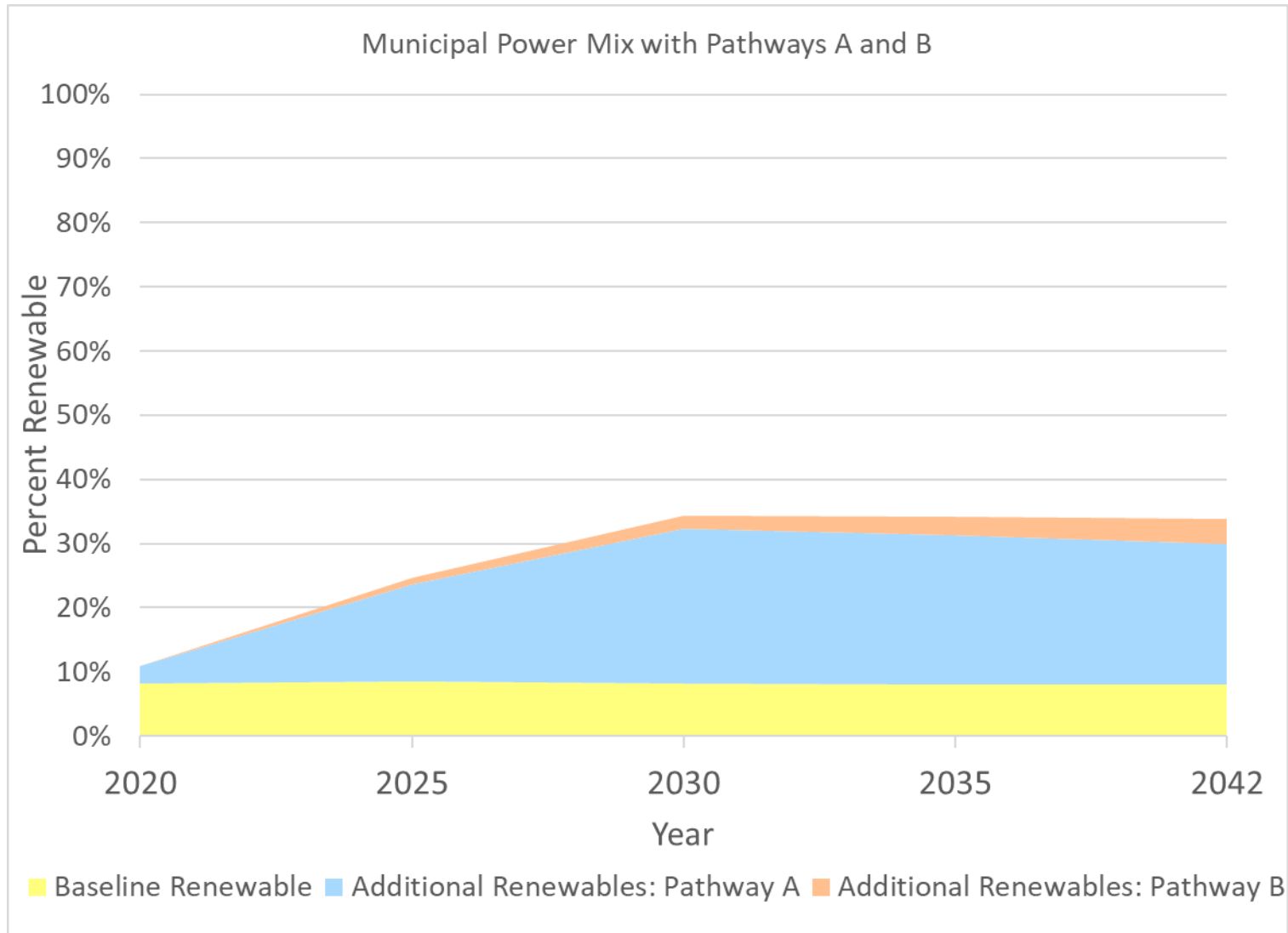




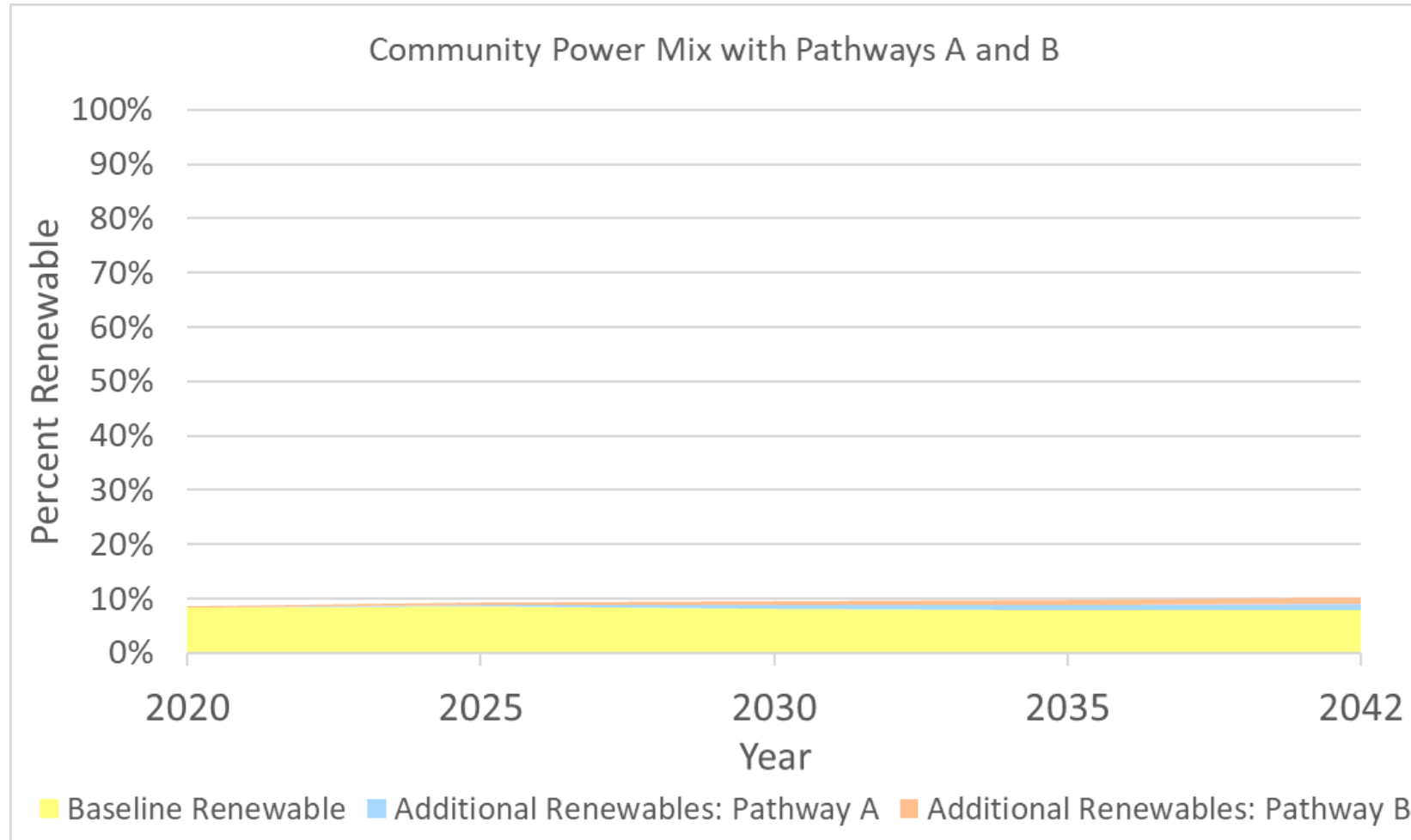
# Pathway A: Impact to the Electricity Mix (Community-Wide)



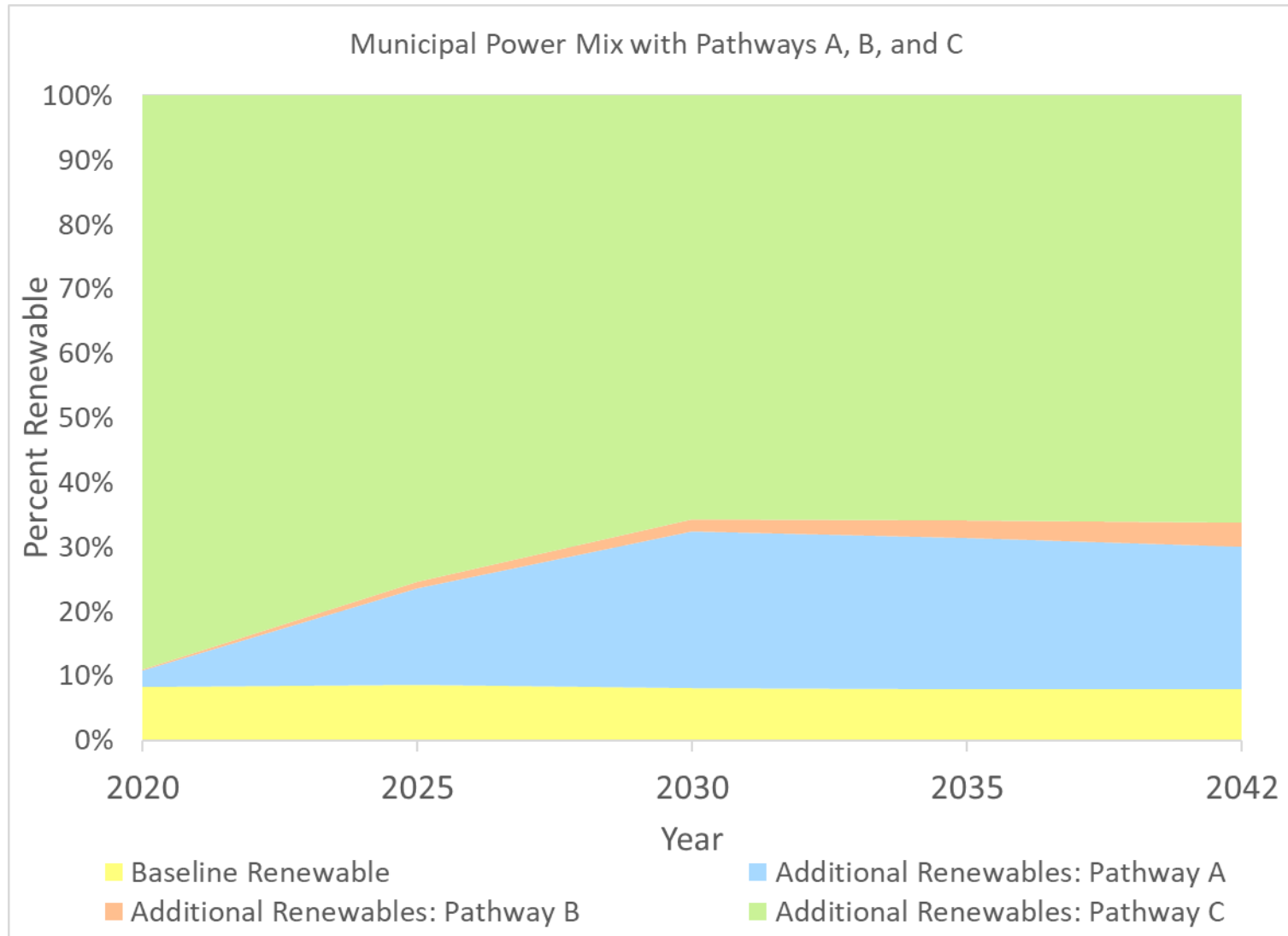
# Pathway B: Impact to Electricity Mix (Municipal)



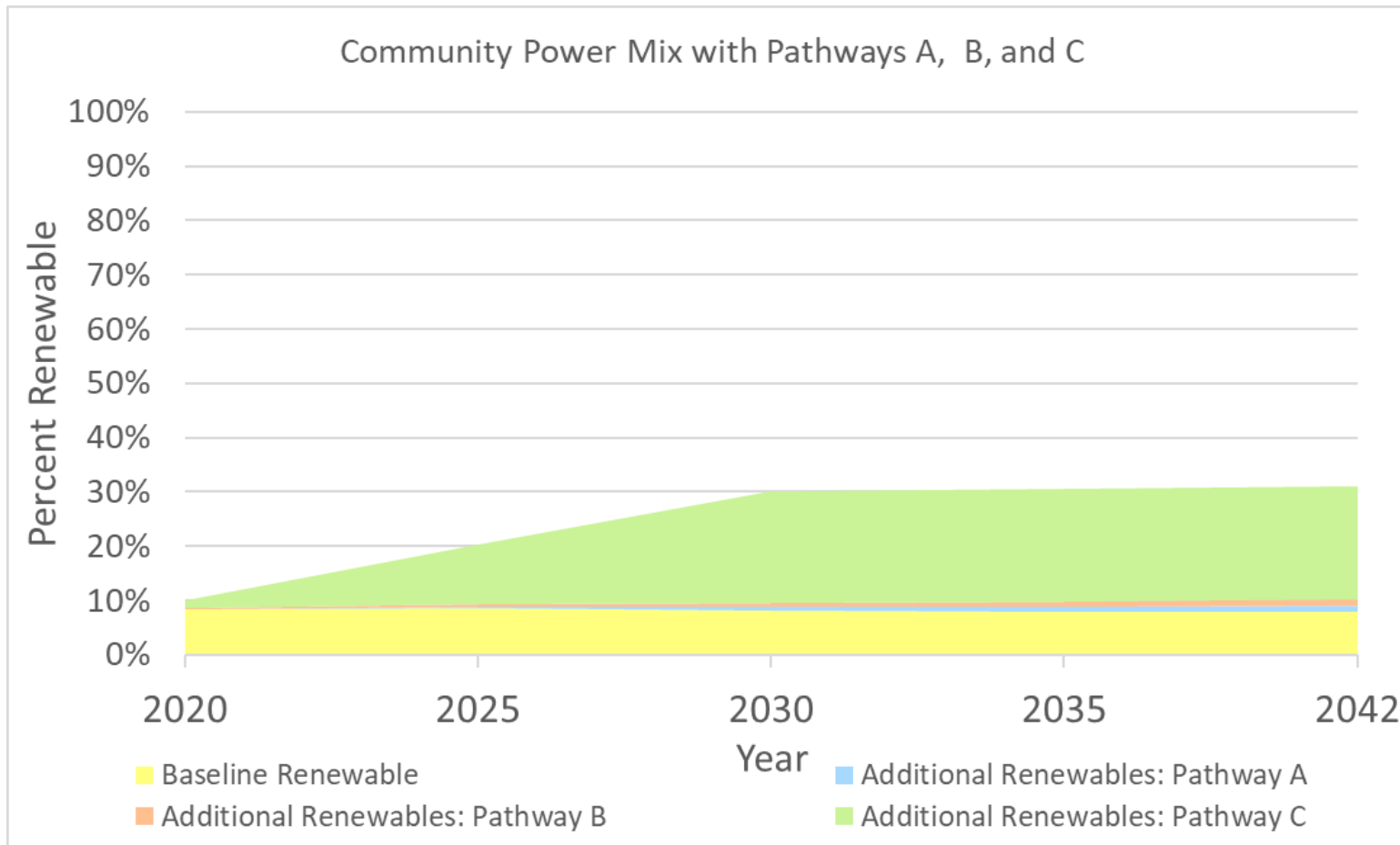
# Pathway B: Impact to the Electricity Mix (Community-Wide)



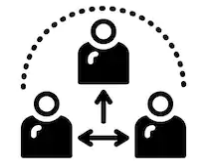
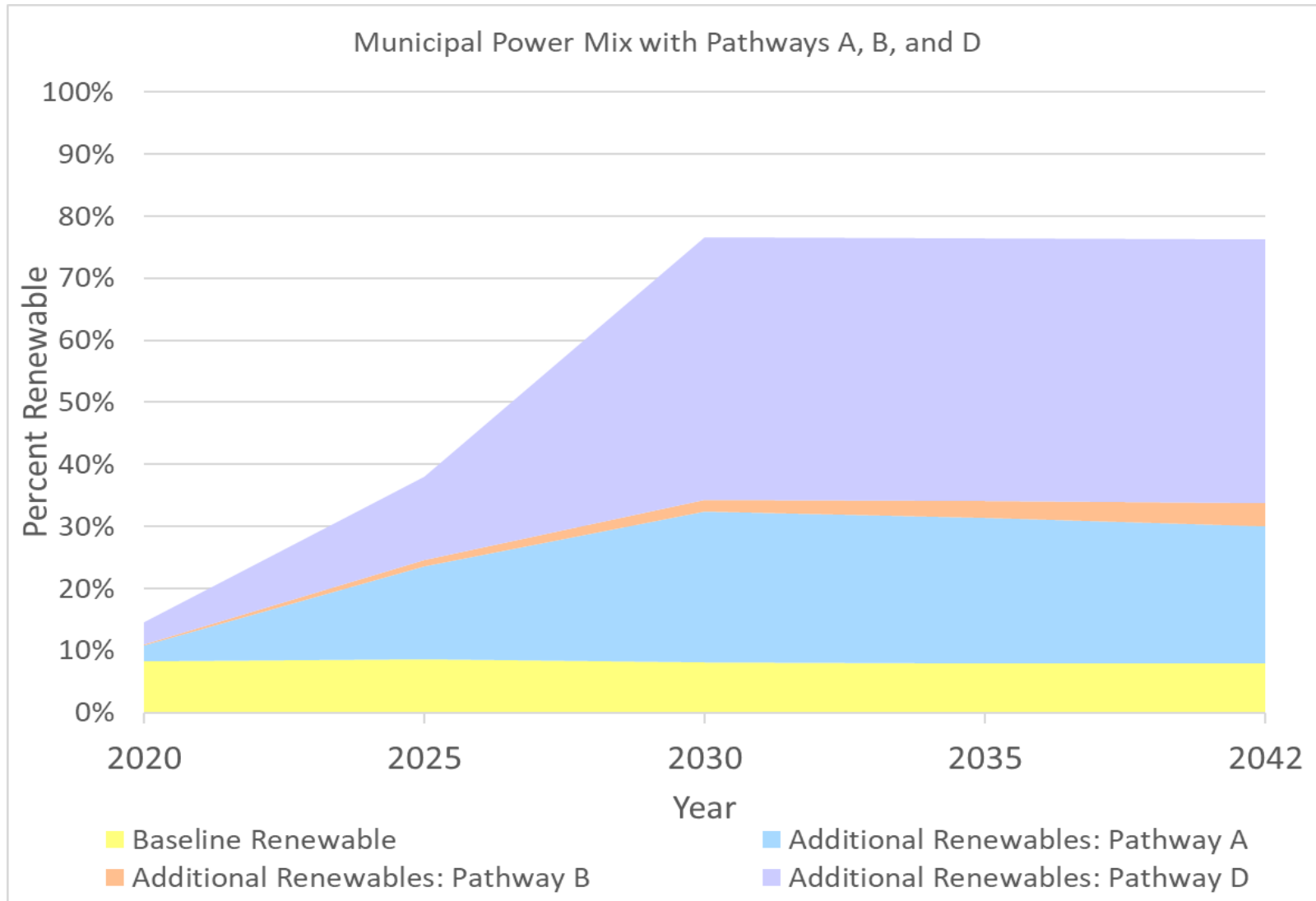
# Pathway C: Impact to Electricity Mix (Municipal)



# Pathway C: Impact to the Electricity Mix (Community-Wide)



# Pathway D: Impact to Electricity Mix (Municipal)



# Pathway D: Impact to the Electricity Mix (Community-Wide)

