



Charleston County Climate Action Plan

RSAC Members Workbook



Members Workbook

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Charleston County Resilience and Sustainability Advisory Committee
Members Workbook





About this Workbook

Dear Resilience and Sustainable Advisory Committee (RSAC) Members,

We're thrilled to welcome you to the Charleston County Climate Action Planning process. This project represents our collective commitment to future generations, and the vital work required to safeguard our natural resources, protect our communities, and ensure economic sustainability in the face of climate change.

Purpose of This Workbook

The purpose of this workbook is twofold: to keep you informed about the developments at every stage of the Climate Action Plan, and to actively seek and incorporate your valuable feedback.

In the coming months, this workbook will serve as a bridge connecting our project team with you, the RSAC members. It will provide updates on our progress, insights into our strategies, and summaries of the data we gather. However, it is also a two-way street, a platform for you to voice your questions, concerns, and recommendations. Your insights are vital to shaping a plan that is truly tailored to the needs and resources of Charleston County.

Continued Updates and Feedback Solicitation

This workbook is not a static document, but a living, evolving tool. As we progress through each stage of the Climate Action Plan, the workbook will be continuously updated with the latest information, key findings, and specific requests for your invaluable feedback. Often, these requests will take the form of short, succinct surveys designed to gather your insights on various aspects of the plan. Charleston County Sustainability Manager, Arielle Gerstein, will keep you informed of these updates and feedback opportunities via timely emails.

Localizing the Plan

Localizing the climate action plan is a top priority for us. The challenges we face from climate change in Charleston County may not be the same as those in other regions. Sea-level rise, more intense hurricanes, flooding, and hotter summers require specific, localized solutions.

By creating a plan based on local realities, we can design policies and strategies that are more effective, more efficient, and more equitable. But, to achieve this, we need your expertise, your



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understanding of our community, and your commitment to making Charleston County a leader in resilience and sustainability.

We hope you'll use this workbook as a tool, a reference, and a guide in this journey we're embarking on together. We're excited about the opportunities that lie ahead and the difference we can make as a team.

Best wishes,

The SSG and Charleston County CAP Project Team



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Context + Background

The RSAC will support the development of the Climate Action Plan, the All-Hazard Vulnerability & Risk Assessment, and any related County ordinances. The Committee will make recommendations to the County Council about technical elements and action items related to the Climate Action Plan, All-Hazard Vulnerability and Risk Assessment, and any ongoing sustainability and resilience work.

RSAC Membership

Name	Sector/Organization
Joe Boykin	County Council Member
Sally Brooks	Charleston County Staff
Diamond Curry	Chamber of Commerce
TBD	Higher Education Institution
Kyle James	BCDCOG
Adrian Cain	Homebuilders Association
Scott Curtis	Resilience Technical Expert
Scott Runyon	Energy
Stewart Weinberg	Sustainability Technical Expert

First RSAC Meeting Presentation

Link to SSG's [first presentation to the RSAC](#). **(Image is a link)**



Second RSAC Meeting

The workbook was presented for discussion.

Third RSAC Meeting: 19 September 2023

In this meeting we reviewed the modeling assumptions for the low-carbon pathway and target options for the low-carbon target.



Important links + background information:

- **Low-carbon assumptions** [\[review slides 6-25\]](#)
- **Low-carbon targets discussion paper with options** [\[paper linked here\]](#)
- **Feedback survey** [\[form linked here\]](#)



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The SECAT has discussed the low-carbon assumptions and the SSG team will review them with the RSAC in this meeting.

The SECAT did not arrive at a final target recommendation, they expressed support for the:

- Science-based target and
- The Federal target option.

Both of those targets are explained in the [targets discussion paper](#).

Pre-meeting questions for the SSG team:

- No pre-meeting questions were asked.

Fourth RSAC Meeting: 25 October 2023

Topic: Implementation Planning and "First look" at the Draft Low-carbon Scenario

Presentation link: [25 October 2023](#)

[Community Questionnaire](#): please take and share! Open until **Dec 15, 2023**

Evaluation form on the meeting: <https://form.typeform.com/to/lpQ5Onff>

Feedback request to RSAC members:

- Please list any major initiatives, programs, or goals you have underway or planned for the short-to-medium term that might intersect the major emissions areas: transportation, buildings, energy, and land use. (We'll see if there are ways to leverage them for more resources or to integrate direct climate actions.)

- BCDCOG

- [Map](#) with ongoing transportation projects in the region
- [Lowcountry Rapid Transit + Transit-oriented Development Study](#)
- [LowcountryGo Vanpool + Emergency Ride Home](#)
- CARTA
 - Amenities ([shelter expansion](#), payment app, on-board WiFi, etc.)
 - Beach Reach (seasonal beach shuttle between Mt. P and IOP)
 - [Regional Human Services Transportation Coordination Plan](#)
 - [Downtown Charleston Transit Study](#)
 - [On-Demand](#)
 - [Fleet Electrification](#)
 - [Regional park-and-rides](#)

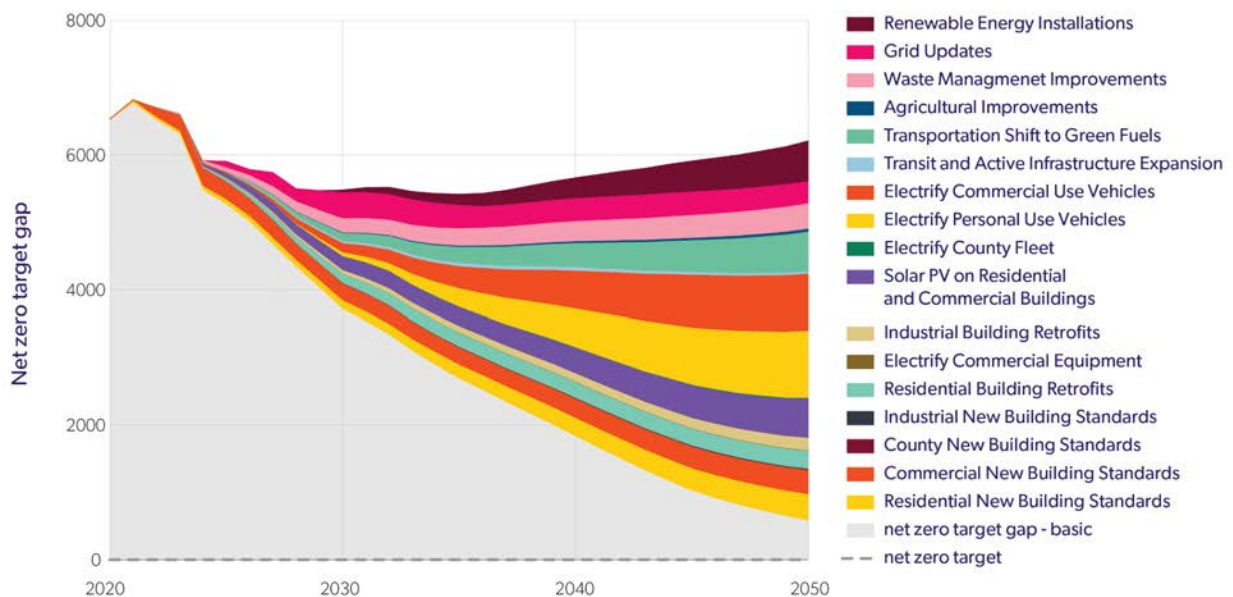


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■ Plans and projects in development

- [CHATS Long-range Transportation Plan](#)
 - [CHATS Congestion Management Process](#)
 - [CHATS Regional Intelligent Transportation Systems Architecture](#)
 - [BCDCOG Regional Micromobility Plan](#)
 - [BCDCOG US-52 Corridor Study](#)
 - [BCDCOG Regional Electric Vehicle Strategy \(coordinated CFI submission\)](#)
 - [FRA Railroad Crossing Elimination Grant for at-grade crossing sensors](#)
 - [CORE SC "smart corridor" designation](#)
 - [USDOT Thriving Communities Program for Remount Rd and Reynolds Ave](#)
 - [Dorchester Road transit signal prioritization pilot](#)
- Please let SSG know of any questions you have regarding the draft low-carbon scenario, in this workbook (below) or through Arielle.

Draft Low-carbon Scenario as of 25 October 2023 (updated Oct 30 2023)





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What does this scenario mean?

- Provides a blueprint for implementation planning by showing how much and how quickly emissions need to be reduced in each of the sectors.
- Actions must all be implemented in order to reach the low-carbon (climate pollution reduction) targets.
- Shows the relative impact of each of the actions.
- Highlights the importance of low-emissions electricity in meeting our climate goals.
- Target used to create this scenario for 2035: science-based, with 2020 as a base year.

Example: Residential Building Retrofit Actions

- Switches from fossil fuels to electricity.
- Improves insulation and building envelope.
- Reduces total energy demand.
- Reduces costs to heat/cool houses.
- More efficient houses hold temperature longer in power outages.
- Deep emissions reductions require low-emissions electricity source, including solar panels, and other renewable energy options.
- Including battery storage or other energy storage can increase ability to withstand power outages.

How does this action happen? And when?

- Implementation planning helps answer that part of the equation by factoring in: funding opportunities, feasibility, county capacity, and community priorities.

Questions about the draft low-carbon scenario from RSAC members:

- **Please ask your questions here.**
- **Can we see the data and assumptions being used in the model?**
 - **Yes. The assumptions used for this round were presented in the previous meeting, and the latest are found here. All data and assumptions used in each phase of modeling will be shared in a Data, Methods, and Assumptions Manual (DMA) when the modeling is complete. Until it is complete, we share the assumptions in “real time” with you, as the assumptions get modified through the acquisition of new data and feedback from the engagement process. In addition, a table of the final modeled assumptions will be included in the final Climate Action Plan report.**



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- For the current set of assumptions that were used in the Oct 25th, 2023 draft LC modeling see [here](#)
- Thanks for sharing the link to the updated Google Sheet. The Draft Low-Carbon (Modeled) Scenario graph from 10/25/2023 shows separate strategies for “Transportation Shift to Green Fuels” and “Electrify Commercial Vehicles”. During the 10/25/2023 meeting, Amber noted that “Transportation Shift to Green Fuels” was modeled as a transition to Hydrogen. Municipal and commercial fleet transition in the Google Sheet shows 50% Hydrogen mix by 2050. Are these assumptions separating out the CO₂e reduction estimates for the Hydrogen transition from the municipal and commercial vehicle electrification estimates?
- Yes. To clarify “Transportation Shift to Green Fuels” is for transportation other than on-road (ie: rail, marine, aviation).
- What can we do, zoning-wise? How do we change the ordinance? Parking lots, redeveloping properties, EV stations per parking spaces?
- From RSAC Meeting - Why is the Municipal Fleet action showing a greater impact on emissions reduction than Transit and Active Infrastructure improvements, commercial vehicle electrification, and personal use vehicle electrification combined?
 - The graph looks like these two actions are equivalent, but at the community level it is difficult to see that transit and active mode infrastructure improvements have a cumulative emissions reduction of 929 ktonnes CO₂e while the municipal fleet electrification has a cumulative reduction of 158 ktonnes CO₂e. Also worth noting that this model run does not include the updated transportation modeling from BCDCOG yet, instead I assumed that by 2040 transit mode share will increase countywide to 10%, and active trips will double for short trips
 - Then perhaps I am misreading the Draft Low-Carbon (Modeled) Scenario graph from 10/25/2023, or the colors are mislabeled. But it appears clear that the “Electrify County Fleet” strategy has a greater estimated impact than “Electrify Commercial Use Vehicle”, “Electrify Personal Use Vehicles”, and “Transit and Active Infrastructure Expansion” combined in the graph. Would you be able to share a table with the estimated



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CO2e reduction for each category or add the cumulative estimate to the graph?

- **Thank you for pointing that out, there was a labeling error in the designed wedge diagram above that I missed. The big wedge is Personal Use Vehicles, with County Fleet electrification being a much smaller sliver. I had our designer fix that and reloaded the diagram. I trust this is much clearer.**
- **For transportation strategies, are disincentives (such as parking maximums, parking surge charges for peak periods, tolling, and congestion pricing) being considered?**

- **The heating degree days and cooling degree days in the assumptions table do not seem to match the source data from Climate Explorer.**
 - **They were written in °C-days instead of °F-days, I have changed the assumption sheet to show them in °F-days**

Fifth RSAC Meeting: 12 December 2023

Topic: Implementation Planning, continued

[RSAC Meeting 5 - Presentation](#)

Requests for the RSAC:

1. Review the Prioritization Criteria + Considerations (slide graphics below) and share any additional reactions, feedback, suggestions, or questions:



Prioritization Criteria + Considerations

01	County Authority	<ul style="list-style-type: none"> Is this action within the County's authority and legally feasible? Can the County implement this action on its own/without involvement or support from other tiers of government? Does it require the government to incentivize a private sector action?
02	Staffing + Capacity	<ul style="list-style-type: none"> Does the County have staff or partners with the capacity and technical skills required to support this action? Will it require additional staff capacity or temporary staff augmentation? Does it require investing in training for current staff?
03	Potential GHG Reduction Impact	<ul style="list-style-type: none"> Is it likely that implementing this action will have a significant impact on GHG emissions? Does this action need to be addressed in the next 1-5 years, 5-10 years, 10-20 years to meet GHG reduction goals?
04	County Readiness	<ul style="list-style-type: none"> Has this action been identified as important by Charleston County? Are any elected officials or leaders championing this effort, or likely to support? Are any similar initiatives already underway?
05	Community Readiness	<ul style="list-style-type: none"> Has this action been identified as important by the community? Are people in the community interested in the issue? Is there community momentum to move this initiative forward?

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6	County Policies + Programs	<ul style="list-style-type: none"> Does this action fit in or conflict with existing County policies and programs? Is there opportunity to build on existing initiatives? Does it require altering existing policies and programs? Does it require developing new policies and programs?
7	Cost	<ul style="list-style-type: none"> What is the cost to launch and implement this action? Cost over time? Does this action require full or partial funding from the County? Can it be achieved via low or no-cost mechanisms? (incentives, service/project partnerships)
8	Existing Resources	<ul style="list-style-type: none"> Are resources (funds, staff, expertise) either readily available or can resources be obtained to implement and manage the action? Is there opportunity to build on existing initiatives? Can the County leverage existing partnerships to implement this action?
9	Funding Opportunities	<ul style="list-style-type: none"> Are there funding/resources that can be obtained to implement the action? What level of effort is required to obtain those resources? (automatic/opt-in tax credits vs. competitive grant applications) Does the County have staffing/capacity to pursue new funding?
10	Co-Benefits	<ul style="list-style-type: none"> Does this action create co-benefits for the County and community? (job creation, open space, environmental preservation) How desirable are the secondary benefits? Does it have potential to reduce inequity? Does it benefit vulnerable communities?
11	Equity	<ul style="list-style-type: none"> Does the action have the potential to reduce inequity? Does it benefit vulnerable communities? Which communities? Does this action have any potential unintended consequences for equity in Charleston County?

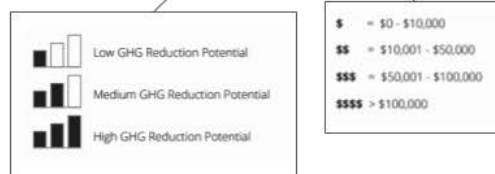
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- Review the revised Prioritization Scoring weights and the SECAT's feedback (slide graphics and SECAT feedback below) and share any additional reactions, feedback, suggestions, or questions:



Prioritization Scoring

Capacity		Readiness		GHG	Cost Feasibility			Benefits		TOTAL
County Authority	Staffing + Technical Capacity	Political Will + County Readiness	Community Readiness	Potential GHG Reduction	Cost	Existing Resources	Funding + Resource Opportunities	Co-Benefits	Equity	
5	5	4	4	3	3	2	2	1	1	30



Prioritization Scoring - SECAT Feedback

- Concerned that equity weight is too low
- Political will should be a 5 - "Nothing gets done without County approval."
- "Cost and capacity are closely related - they should be closer or the same in weight"
- "Is it possible to forecast for or calculate County Readiness? How would we do that?"
- Incentive programs will rank higher in feasibility; regulatory measures will rank lower

3. Review RSAC Meeting 5 Roundtable Discussion questions and add any additional responses or comments below each bulleted question:

- How can we incorporate Charleston County-specific, local equity priorities into potential actions?
- What other considerations should we keep in mind while narrowing down criteria and potential actions?
 - Ex: significant/rapid population growth in the County; plans for new County facilities



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- Can you think of examples from your work or programs/projects from around the County that focus on equity issues and also positively impact GHG emissions, air quality, or pollution?
- What will help us get to a final draft and proposed actions that are feasible, impactful, and beneficial to the County?
- Any other questions or comments to share?

RSAC CAP Project Recommendations

- Low-carbon assumption recommendations, done.
- Target recommendation: no defined recommendation. SSG has used the science based option, based on discussions in the RSAC and SECAT meetings.

Sixth RSAC Meeting: 6 February 2024

Topic: Draft Plan Overview

[RSAC Meeting 6 - Presentation Part 1 Financial Impacts](#)

[RSAC Meeting 6 - Presentation Part 2 Timeline and General Info](#)

Requests for the RSAC:

[Review the Draft Document Here](#) by February 16

Consider the following:

- Is there anything missing?
- Is there any incorrect information?
- Has equity been given the appropriate considerations?
- What is most exciting?
- What is most concerning?

As discussed in the meeting: [Rewiring America calculator for household credits and rebates](#).



Project Background

About the Charleston County Climate Action Plan Process

Charleston County is developing a Climate Action Plan (CAP) that is equity-centered, community-based, integrated, and capable of achieving deep emissions reductions goals. The CAP will review previous efforts, identify targets, describe the need for and benefit from the CAP using best practices for goal setting and forecasting emissions. The CAP will also assess the risks that the County will face from the impact of climate and non-climate stressors.

Charleston County' CAP will be developed through two main and interrelated work streams: technical modeling, analytics, and engagement.

Technical Modeling Process

The technical analytics team will undertake modeling and data analysis to support the creation of the CAP. First, they will build upon the current community greenhouse gas (GHG) inventory, to measure and report on Charleston County's current greenhouse gas emissions. Then, the team will use our modeling technology to project a "business-as-usual" (BAU) scenario extending to 2050. This scenario will be a projection of energy use and greenhouse gas emissions in Charleston County should the community continue with its current trends, plans, policies, and practices, and assumes no additional policy or climate action intervention.

Based on the gap between BAU and the target identified, the team will develop a **low-carbon scenario to analyze what measures need to be taken for Charleston County to achieve its climate goals**. Examples of measures include residential energy efficiency retrofits, the electrification of transportation, changes in land-use, district energy systems, community energy generation opportunities, and approaches to development in new growth areas, among other opportunities.

Engagement

The engagement team will focus on engaging interested and affected parties, including the public to ensure the CAP is rooted in the realities of and opportunities in Charleston County, and to help build public support for the plan. The engagement plan details who will be engaged and how, as well as how to foster ongoing engagement, support, and participation in the implementation of actions to reduce emissions. The engagement plan will incorporate a



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mix of engagement techniques depending on the needs of the affected parties. Insights from the engagement process will shape the aspects of the technical analysis that form the basis of the CAP.

Charleston County Climate Action Plan Decision Statement

By Spring/Summer 2024, the County Council for Charleston County will approve the County's climate action plan, outlining a pathway to a low-carbon target by 2050, with an interim target for 2035, while reflecting the knowledge, input, and perspectives of the community.

Key Project Outputs

- **Social Equity:** The CAP will assess impacts on different communities and groups in Charleston County, and how Plan implementation will address social equity considerations.
- **Benefits Framing:** The CAP will evaluate the benefits of climate action and focus on how the plan's elements will improve community well-being.
- **Implementation Evaluation:** The CAP will assess the costs and benefits of action, and the costs of inaction compared with climate action.
- **Partnerships:** The CAP will incorporate a strategy for engaging partners in designing and implementing actions, and mechanisms to report on and enhance those partnerships for community benefit.
- **Performance progress:** The plan will establish a system to track progress over time, including GHG emissions, benchmarks, alignment with overall scope, and strategy performance metrics. The system will be capable of being used for annual updates as well as incremental tracking over the course of the year.

Project Deliverables + Givens

- Project end date: April 2024
- BAU + BAP
- Low Carbon Scenario (LCS) and Action Strategies
- Interim low-carbon target for 2035 and 2050
- RSAC Collaboration
- Staff Expert Climate Advisory Team (SECAT) Collaboration
- General Public Collaboration (Workshops and Town Hall)
- CAP and Implementation Plan



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Project Glossary

BAU: business-as-usual modeling projection, showing projected greenhouse gas emissions for Charleston County from 2020 (base year) to 2050, if nothing new happens with respect to reducing emissions.

BAP: business-as-planned modeling projection, showing projected greenhouse gas emissions for Charleston County from 2020 (base year) to 2050, including current policies that impact greenhouse gas emissions reductions, but not a low-carbon policy intervention.

CAP: Climate Action Plan.

LCS: low-carbon scenario; modeling of low-carbon actions needed, in total, to reduce Charleston County's scope 1 and scope 2 emissions to the intended low-carbon target.

RSAC: resilience and sustainability advisory committee.

SECAT: staff expert climate action team.

SSG: Sustainability Solutions Group (project consultants).



Project Active Public Engagement

Climate Action Planning 101 Webinar

A “Climate Action Planning 101” webinar was held on Jun 22, 2023 , with approximately 30 people attending. The Robert Lunz Group of the Sierra Club partnered with the County to host the online event.

- The webinar recording can be found [here](#).
- Survey [evaluation results are here](#).

Acting on Climate Together: Impacts of Extreme Weather Events in Charleston County

This public webinar was held on October 10, 2023 on Zoom webinar platform.

- The webinar recording can be found [here](#).
- Presentation slides are [here](#).
- Results from Mentimeter activities are [here](#).

Acting on Climate Together: Solutions for Charleston County

This webinar was held on January 18, 2024 on Zoom webinar platform.

- The webinar recording can be found [here](#)
- Presentation slides are [here](#).
- Results from Mentimeter activities are [here](#).



Technical Engagement

SECAT Meetings

The first meeting of the SECAT will take place **Jul 11, 2023** and will review the project process and the initial BAU + BAP projections. These will be shared in this workbook for RSAC review as well.

2020 Draft Base Year Projection

As we embark on this journey to create a comprehensive Climate Action Plan, establishing a solid baseline is crucial. Therefore, we have designated 2020 as our base year for emissions projections. This means all our greenhouse gas emissions data, strategies, and goals moving forward will be compared and evaluated against the data gathered in this year. By using 2020 as a benchmark, we can accurately track our progress, identify areas for improvement, and ensure that our climate action strategies are effectively reducing emissions in Charleston County.

Model Calibration

Our model is essentially a simplified representation of a system, used to predict or understand future behavior or phenomena. We integrate fuels, sectors and land-use to enable a bottom-up accounting for energy supply and demand. For any given year, the model traces the flows and energy transformations from sources through energy currencies (eg: electricity and gasoline) to end-uses (e.g., space heating and personal vehicle use) to energy costs and GHG emissions.

Model Calibration is a critical step in the process. Local data for the baseline year is used to ensure the model's accuracy for the Charleston county context. This involves verifying the model structure logic so that differences between observed (real-world measurements) and predicted (model-derived) values are minimized.

The aim is to refine the model so that it can accurately reproduce the behavior of the system under study and can therefore be trusted to make reliable predictions about future emissions under different scenarios.



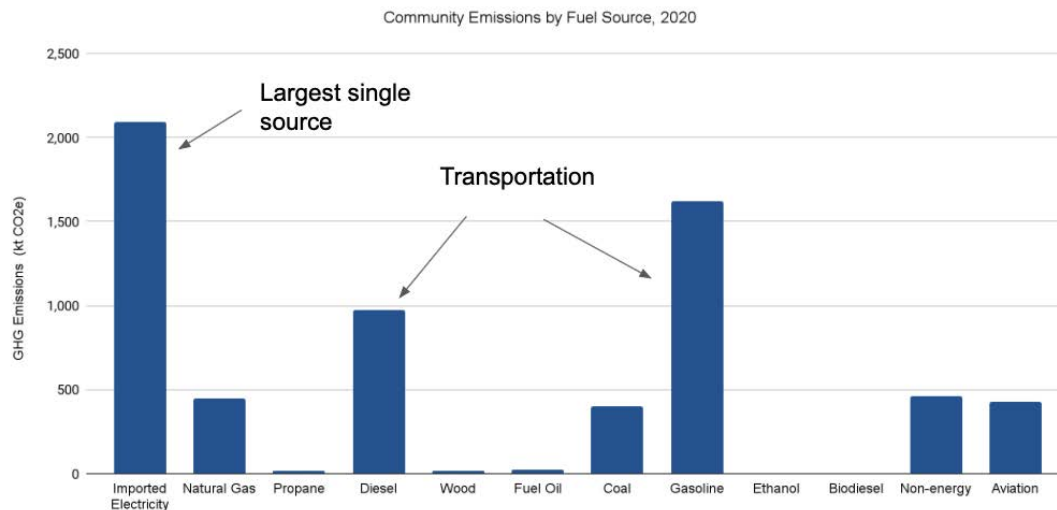
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In the context of climate change and emissions modeling, calibration might involve adjusting assumptions related to the energy use intensity per square foot of specific building archetypes to meet the known electricity use in the county for the base year.

Once a model has been properly calibrated, it becomes a powerful tool for understanding how different actions or policy interventions might impact future emissions, allowing decision-makers to choose the most effective strategies for achieving their climate action goals.

2020 Draft Base Year

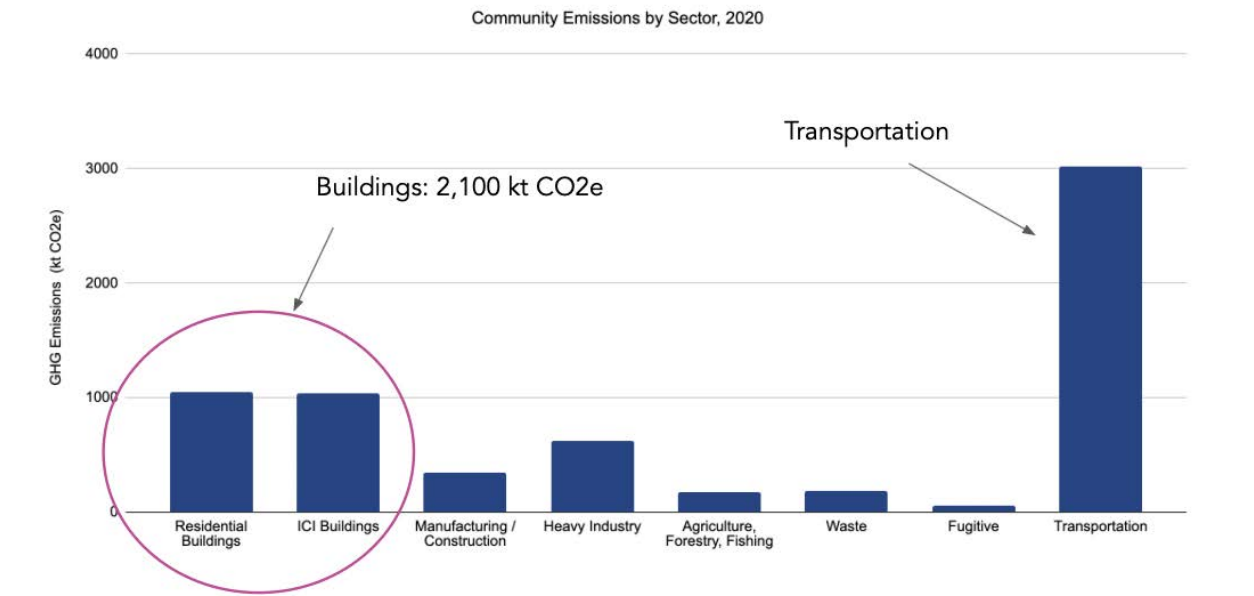
DRAFT Baseline for Charleston County



The above graph illustrates the County's emissions by fuel source and shows that emissions from imported electricity, used primarily for space conditioning, is the largest source of emissions. Fuel use from various transportation activities are also having a large impact.



DRAFT Baseline for Charleston County



Breaking down emission sources by sector illustrates what activities are impacting the emission landscape. In Charleston, transportation activities have the greatest impact on emissions. Buildings also represent a large portion of the emissions generated. Understanding the most significant sources of emissions by both fuel source and sector in Charleston will help decision makers create impactful reduction strategies.

BAU + BAP Model Projection

Happened in July 2023.

LCS Projection

Scheduled for Fall 2023.

Implementation Framework

Work to be completed with Civix. Expect to see updates in the Fall of 2023 and at future RSAC meetings.



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Recommend a multi-stage evaluation framework that will allow the project team to help inform the community and county council on the tradeoffs of potential strategies:

- Stage 1
 - Cost Effectiveness: Estimated greenhouse gas reduction and estimated cost
- Stage 2
 - Co-benefits: Combination of quantitative and qualitative analysis summarized using [Harvey balls diagram](#)
 - Equity: Number of people from “disadvantaged populations” impacted
- Stage 3
 - County staff resources: qualitative (based on brief interviews with Co. staff)
 - County facilities: qualitative (based on brief interviews with Co. staff)
- Stage 4
 - Alignment with available funding
 - Partnerships needed to complete
 - Community readiness: qualitative (based on feedback from public engagement)
- Stage 5
 - Political will: qualitative (based on one-on-one meetings with Councilmembers)