CITY OF MOUNTAIN VIEW

Mountain View + Google:
The Power of Public-Private Partnerships

Google

Environmental Sustainability Program
November 5, 2018

Agenda

- Sustainability “State of the City”
- Civic Leadership project
- Environmental Insights Explorer (EIE) project
- Upcoming Events

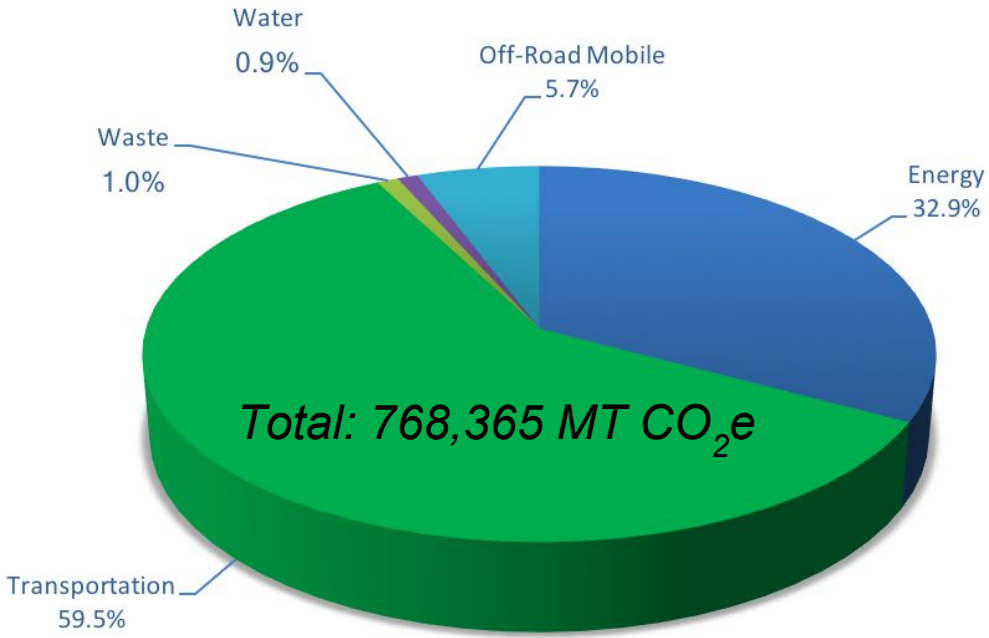
Background

Community GHG Reduction Targets

- Measured 2005 “baseline” GHG emissions levels
- Adopted *absolute* GHG reduction targets (Nov. 2009)

Year	% Below 2005
2012	5%
2015	**10%**
2020	15-20%
2025	26%
2030	37%
2035	48%
2040	58%
2045	69%
2050	80%

2015 Community GHG Emissions



Key Take-Aways:

Transportation and Energy make up more than 90% of emissions

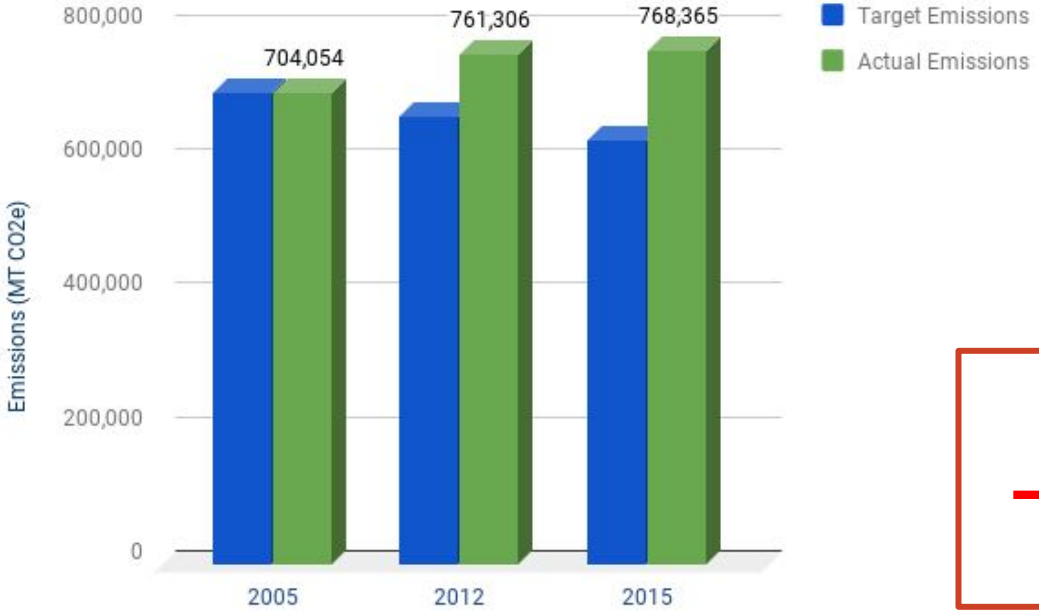
Transportation

- 60% of emissions in 2015
- Up from 54% in 2012
- 22% increase (2005-2015)

Energy

- 33% of emissions in 2015
- Down from 39% in 2012
- 15% decrease (2005-2015)

2005-2015 Target vs. Actual Emissions



Key Take-Aways:

2012 Emissions

- 8.1% above 2005 levels
- 13.8% above 2012 reduction target

2015 Emissions

- 9.1% above 2005 levels
- **21.3% above 2015 reduction target**

Civic Leadership Project

- **Summer 2017**: Google approached the City regarding their Civic Leadership program
- **Fall - Winter 2017**: City brainstorming of potential projects
- **Spring 2018**: Project scope definition and agreement
- **June - Aug 2018**: Project execution

Project Scope: assist the City in achieving its emissions reduction goals by:

- *Streamlining the GHG inventory process*
- *Understanding the community better for more effective* ***engagement***

Core Team Members

City Staff

- Steve Attinger, Environmental Sustainability Coordinator
- Erin Brewster, Environmental Sustainability Analyst II
- Hannah Perkins, Environmental Sustainability Analyst I

Google Volunteers

- Christopher Bian, Software Engineer
- Minyoung Lee, Partner Operations Manager for Market Research
- Debbie Sokol, Program Manager for Nest Store

Greenhouse Gas (GHG) Inventory Streamlining

Challenge #1

Due to GHG inventories being calculated every 3-5 years, the City has **not been able to assess progress** quickly enough to inform policies and programs

Challenge #2

The process for Community and Municipal inventories has been very time consuming, making it **difficult to conduct inventories more frequently**

Challenge #3

The details of previous consultant-created, Excel-based inventories were often opaque or confusing, **adding significant overhead to verify accuracy and quality assurance**

Project Scope

- Recommend ways to reduce time to collect emissions inventory
- Recommend ways to increase consistency of the process and report
- Recommend tools and process

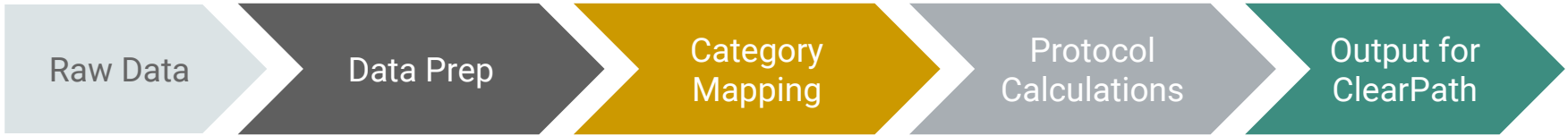
Deep Dive into the GHG Process

- Met with 2015 inventory team to identify difficulties and opportunities for optimization
- Interviewed City staff from relevant departments from whom data is requested (waste, vehicle fleet, etc.) to understand workflow involved
- Studied 2015 inventory process
- Trained on ClearPath inventory tool, its role, and differences from existing process outputs

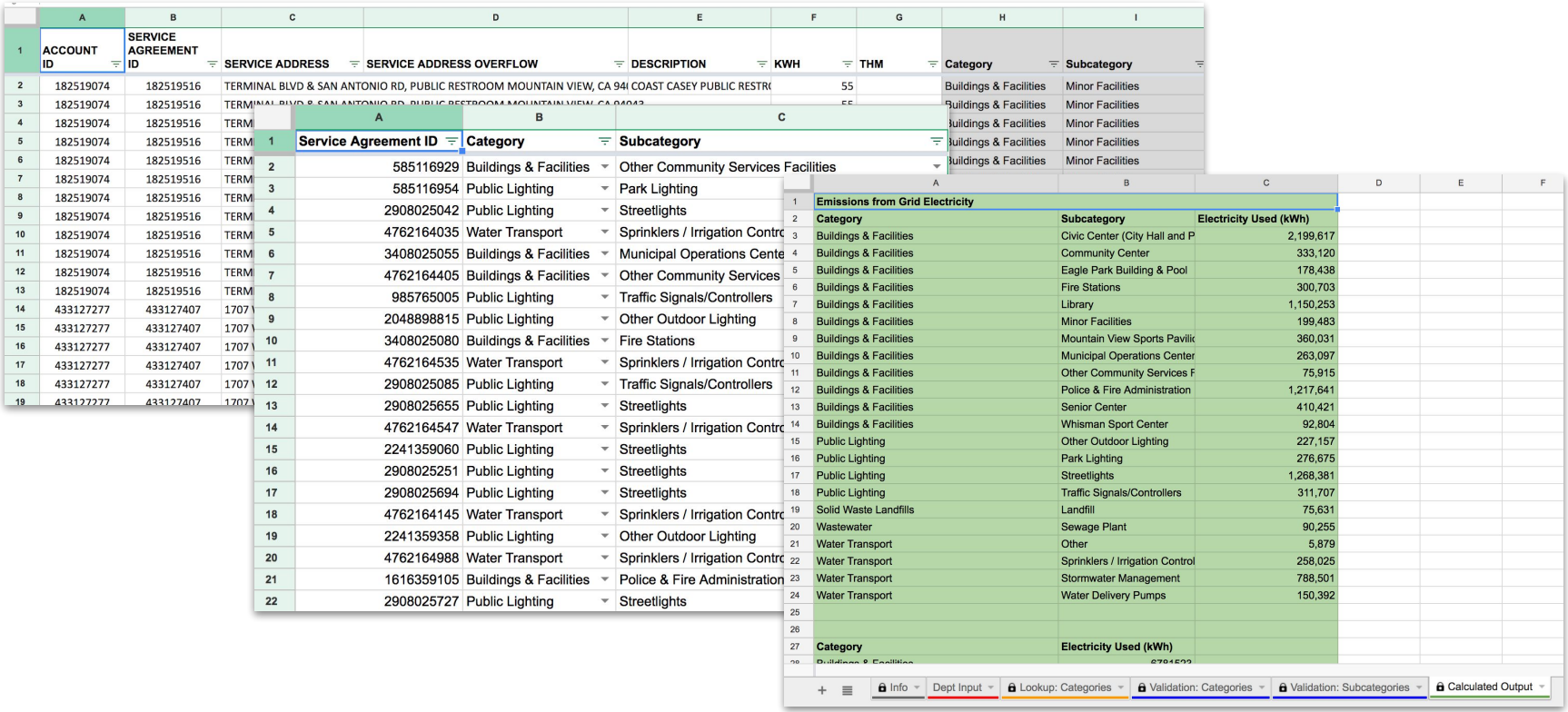
Optimize for Key Benefits

- **Reduce burden on sustainability team and other city staff**
- Streamline process based on **current City systems**
- Achieve **transparency, auditability, and reproducibility** for inventories
- **ClearPath compatibility** means inventories can be imported into an accepted standard tool (ICLEI ClearPath)

Find Common Workflow Pattern



Create Data Source Templates



ACCOUNT ID	SERVICE AGREEMENT ID	SERVICE ADDRESS	SERVICE ADDRESS OVERFLOW	DESCRIPTION	KWH	THM	Category	Subcategory
182519074	182519516	TERMINAL BLVD & SAN ANTONIO RD, PUBLIC RESTROOM MOUNTAIN VIEW, CA 94(		COAST CASEY PUBLIC RESTR(	55		Buildings & Facilities	Minor Facilities
182519074	182519516	TERMINAL BLVD & SAN ANTONIO RD, PUBLIC RESTROOM MOUNTAIN VIEW, CA 94043			55		Buildings & Facilities	Minor Facilities
182519074	182519516	TERM					uildings & Facilities	Minor Facilities
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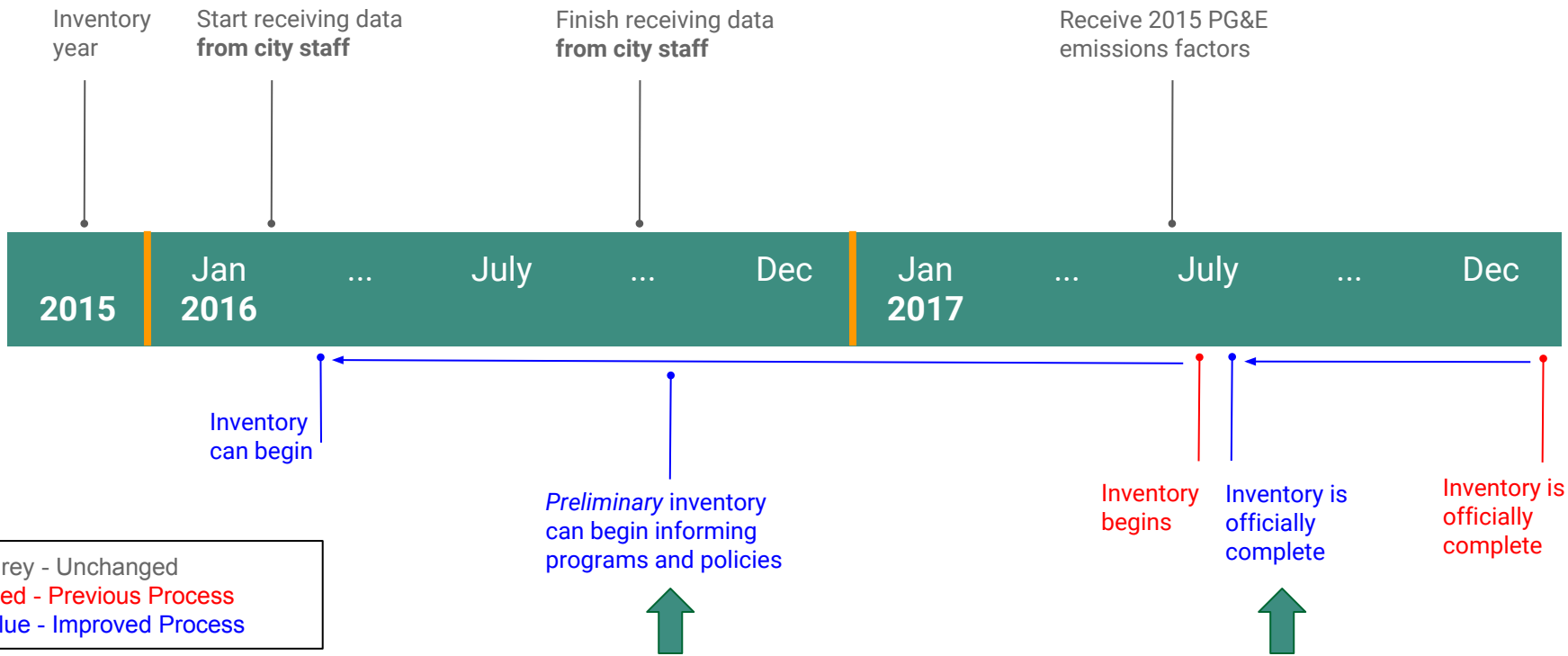
433127277	433127407	1707						
433127277	433127407	1707						
433127277	433127407	1707						
433127277	433127407	1707						
433127277	433127407	1707						
433127277	433127407	1707						

Service Agreement ID	Category	Subcategory
585116929	Buildings & Facilities	Other Community Services Facilities
585116954	Public Lighting	Park Lighting
2908025042	Public Lighting	Streetlights
4762164035	Water Transport	Sprinklers / Irrigation Contro
3408025055	Buildings & Facilities	Municipal Operations Cente
4762164405	Buildings & Facilities	Other Community Services
985765005	Public Lighting	Traffic Signals/Controllers
2048898815	Public Lighting	Other Outdoor Lighting
3408025080	Buildings & Facilities	Fire Stations
4762164535	Water Transport	Sprinklers / Irrigation Contro
2908025085	Public Lighting	Traffic Signals/Controllers
2908025655	Public Lighting	Streetlights
4762164547	Water Transport	Sprinklers / Irrigation Contro
2241359060	Public Lighting	Streetlights
2908025251	Public Lighting	Streetlights
2908025694	Public Lighting	Streetlights
4762164145	Water Transport	Sprinklers / Irrigation Contro
2241359358	Public Lighting	Other Outdoor Lighting
4762164988	Water Transport	Sprinklers / Irrigation Contro
1616359105	Buildings & Facilities	Police & Fire Administration
2908025727	Public Lighting	Streetlights

Emissions from Grid Electricity		
Category	Subcategory	Electricity Used (kWh)
Buildings & Facilities	Civic Center (City Hall and P	2,199,617
Buildings & Facilities	Community Center	333,120
Buildings & Facilities	Eagle Park Building & Pool	178,438
Buildings & Facilities	Fire Stations	300,703
Buildings & Facilities	Library	1,150,253
Buildings & Facilities	Minor Facilities	199,483
Buildings & Facilities	Mountain View Sports Pavilic	360,031
Buildings & Facilities	Municipal Operations Center	263,097
Buildings & Facilities	Other Community Services F	75,915
Buildings & Facilities	Police & Fire Administration	1,217,641
Buildings & Facilities	Senior Center	410,421
Buildings & Facilities	Whisman Sport Center	92,804
Public Lighting	Other Outdoor Lighting	227,157
Public Lighting	Park Lighting	276,675
Public Lighting	Streetlights	1,268,381
Public Lighting	Traffic Signals/Controllers	311,707
Solid Waste Landfills	Landfill	75,631
Wastewater	Sewage Plant	90,255
Water Transport	Other	5,879
Water Transport	Sprinklers / Irrigation Control	258,025
Water Transport	Stormwater Management	788,501
Water Transport	Water Delivery Pumps	150,392
Category	Electricity Used (kWh)	

Info | Dept Input | Lookup: Categories | Validation: Categories | Validation: Subcategories | Calculated Output

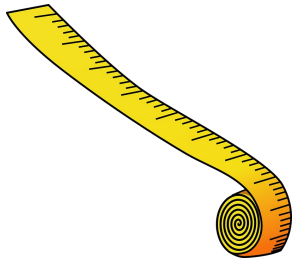
Improved Workflow Timeline



Measuring Impact

- 2015 GHG inventories
  - External consultant: 160 hours
  - City staff: 100 hours

~260 hours



- Future GHG inventories (based on Google's work)
  - External consultant: 0 hours
  - City staff: 40 hours

~40 hours

What We Accomplished

Original Scope:
Recommend tools and process to reduce time, and increase consistency of the process and final report

Completed Beyond Original Scope:
Built and tested ready-to-use templates, and trained Environmental Sustainability Analyst on how to use, maintain, and build new templates

Community Insights

Challenge #1

98% of GHG emissions are attributed to community activity (vs. municipal operations)

Challenge #2

The City has not achieved its community GHG emissions reduction targets to date

Challenge #3

The City wants to improve engagement results through better understanding the community's needs and motivations around sustainable living

Project Scope

- Identify key barriers and motivators for community members to choose to live more sustainably

- Recommend key communication channels and strategies

Obtain Community Input

Outreach efforts to collect community input included **surveys** and an **in-person community meeting**. Channels included:

- Postcards
- Mountain View Voice ads
- Printed surveys, flyers, sandwich boards downtown
- Social Media (Nextdoor, Facebook, Twitter)
- Email distribution lists (e.g. Neighborhood Associations, Chamber of Commerce)
- Google Ads

Obtain Community Input

85% of attendees at the community meeting were **first-time attendees** of a sustainability-focused event!

Collected 738 responses total

- 43 community meeting attendees
- 695 survey responses

Community Feedback & Insights

General

- Mountain View community is passionate about sustainability
  - 85% would avoid driving if good alternatives exist
  - 80% use landscaping waste collection for food waste/food soiled paper
  - 80% of those who do not have food scraps collection wants it
- 80% would prefer to frequent a “green business,” all else equal

- Email preferred for time-sensitive notifications / quick announcements
- Website generally preferred for comprehensive information
- Social media preferences tend to vary; generally prefer Nextdoor, Facebook

*Data: Community Meeting Scribe Notes, Healthier Environment Survey (General + Google)

Community Feedback & Insights

Property Owners

- Financial incentives to cover upfront costs would help with home improvements around energy efficiency
- Focus education on contractors and architects
- Workshops for home energy efficiency improvements

Renters

- Wants programs incentivizing landlords and large apartment complexes to make changes around sustainability
  - e.g. building energy efficiency, shared composting
- Social media used for community building and sharing resources
- Wants to drive as little as possible

*Data: Community Meeting Scribe Notes, Healthier Environment Survey (General + Google)

Community Feedback & Insights

Parents of K-12

- Supports sustainability education for children
- Certain roads and intersections are too unsafe for children to bike/walk to school on their own
- Most active on social media; recommend building a parent-oriented social media community to communicate safety updates

Works in Mountain View / Lives Elsewhere

- Public transit / bike lanes across City boundaries are not well connected
- Wants employers to provide transit discounts or company shuttles
- Wants least amount of contact from City; recommend communicating transit updates and changes through employer

Community Feedback & Insights

Seniors

- Most likely to use MV Community Shuttle for sustainable transit alternative
- Cost is a larger consideration
- Concerned about mobility

Business Owners

- Most feel like they already operate sustainably
- Strongly prefer email communications only

Non-English Speakers

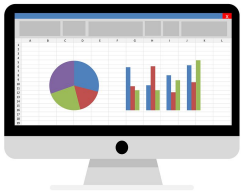
- Prefers in-person outreach / education over written / online communication
- Most frequent carpoolers

*Data: Community Meeting Scribe Notes, Healthier Environment Survey (General + Google)

Next Steps

GHG Inventories

- Develop remaining data templates
- Complete 2017 Community GHG Inventory start-to-finish with new workflow and confirm results of streamlined process
- Explore advanced forecasting and planning features available through the ClearPath tool



- Stretch Goal: consider sharing process and templates with other cities

Community Engagement

Engagement Strategies

- Gather more data
  - Business owners
  - List segmentation
- Offer member-specific programs targeting specific concerns and barriers
- Track engagement metrics across communication channels

CITY OF MOUNTAIN VIEW

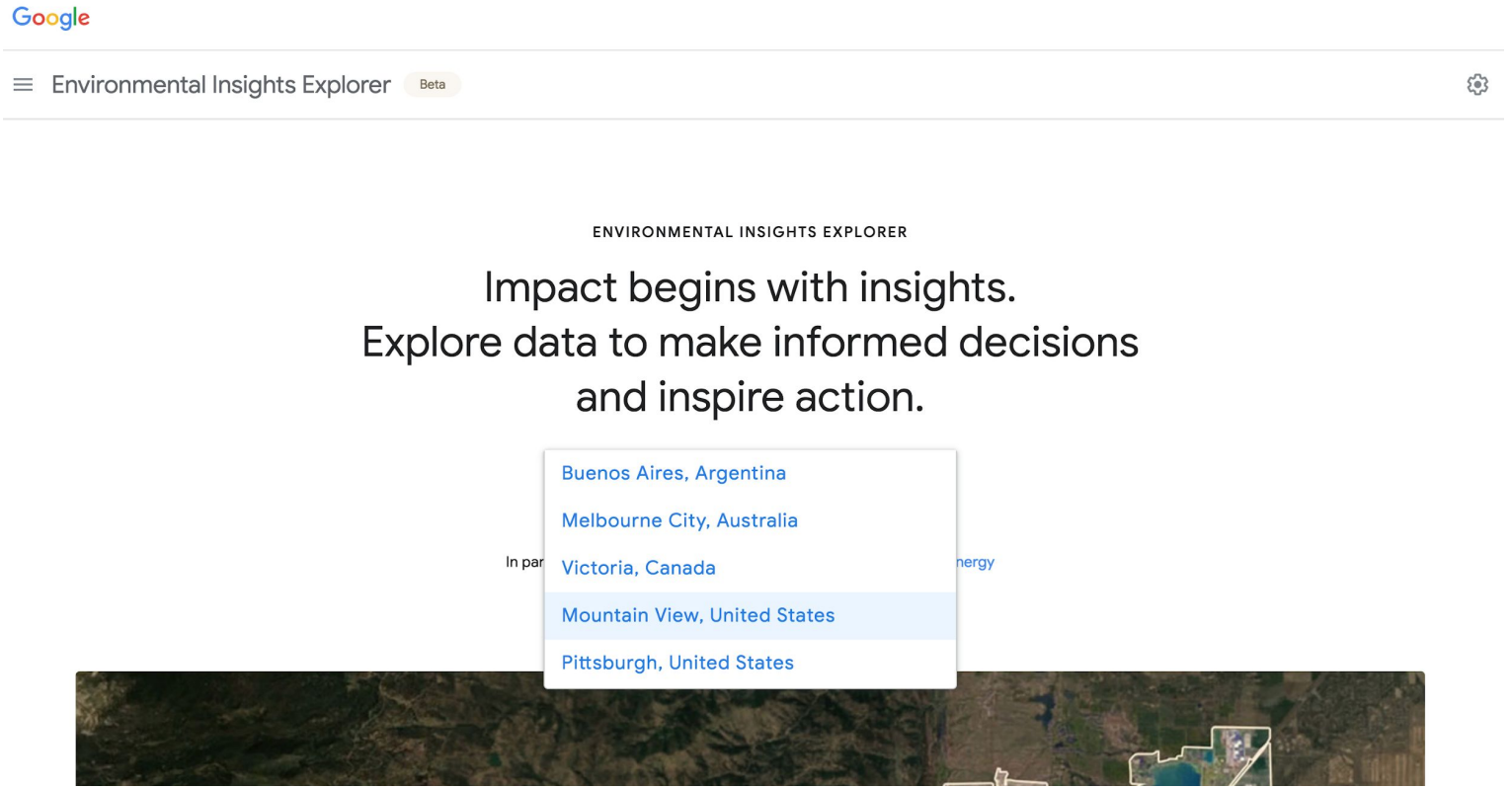
Environmental Insights Explorer (EIE)

g.co/environmentalinsights

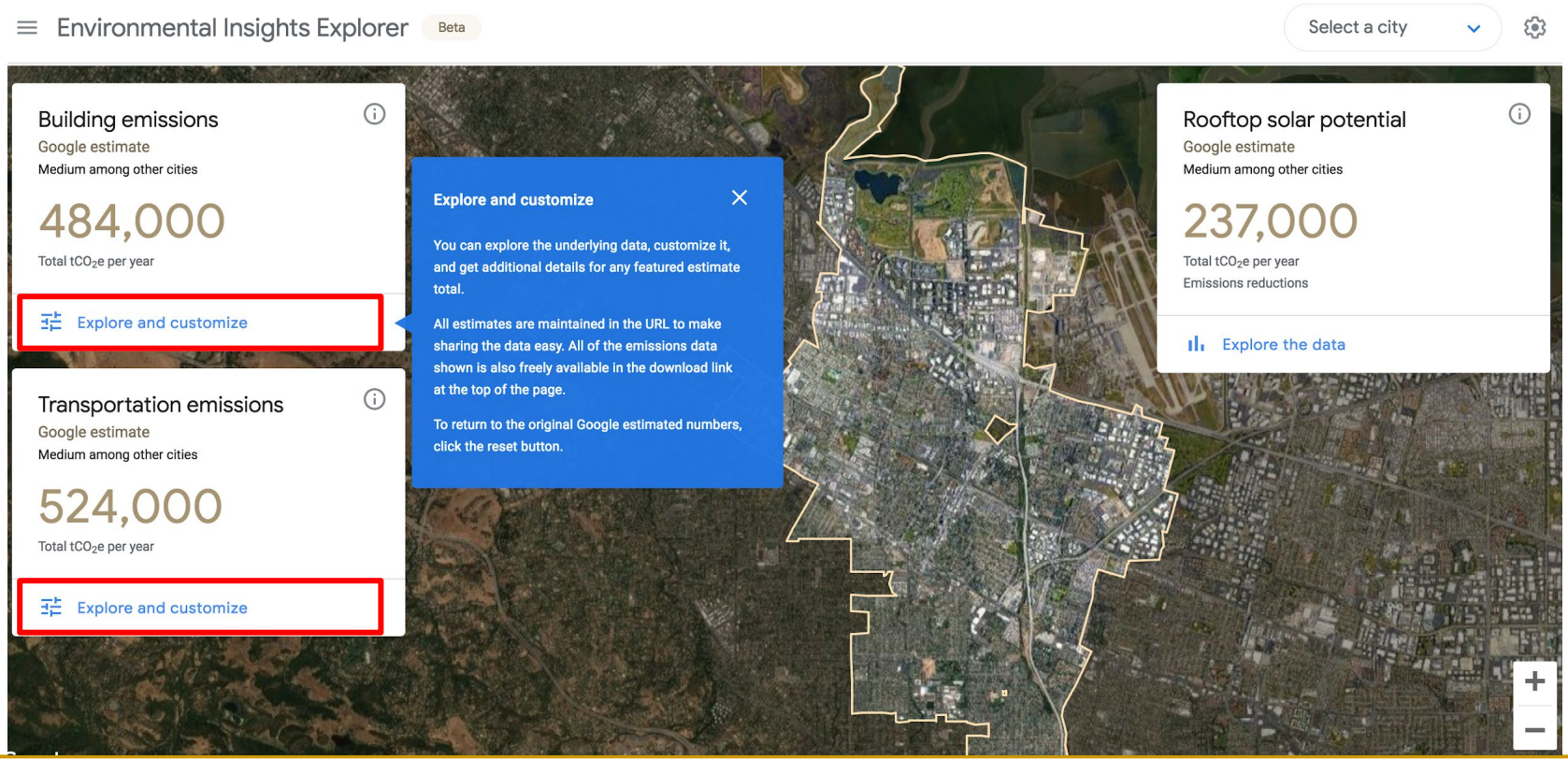
Cities account for >70% of global CO_2 emissions

https://www.c40.org/why_cities

Accelerate CO2 Reduction



Emissions and Offsets



NASA Model Projections

Environmental Insights Explorer Beta

Select a city

20 year climate projections

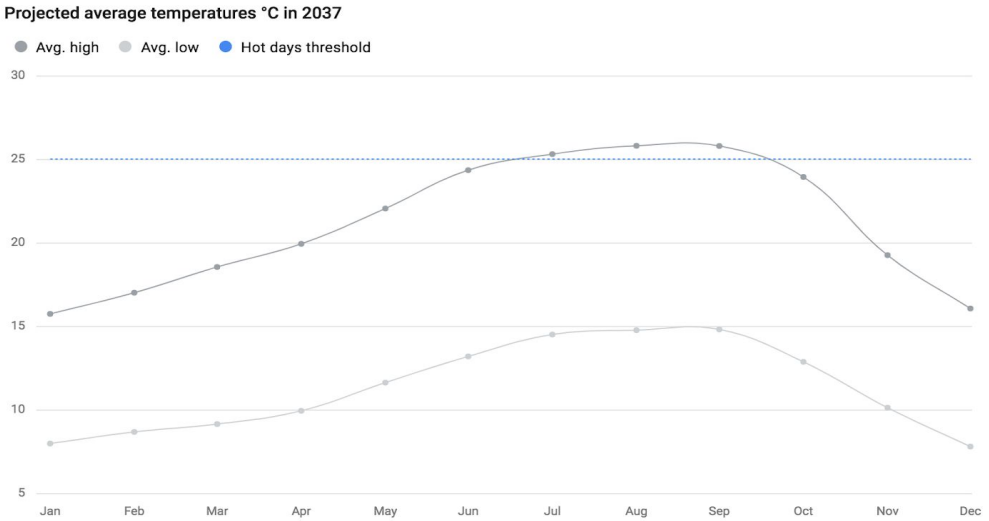
From NASA Earth Exchange

Temperature
21 day increase in hot days projected

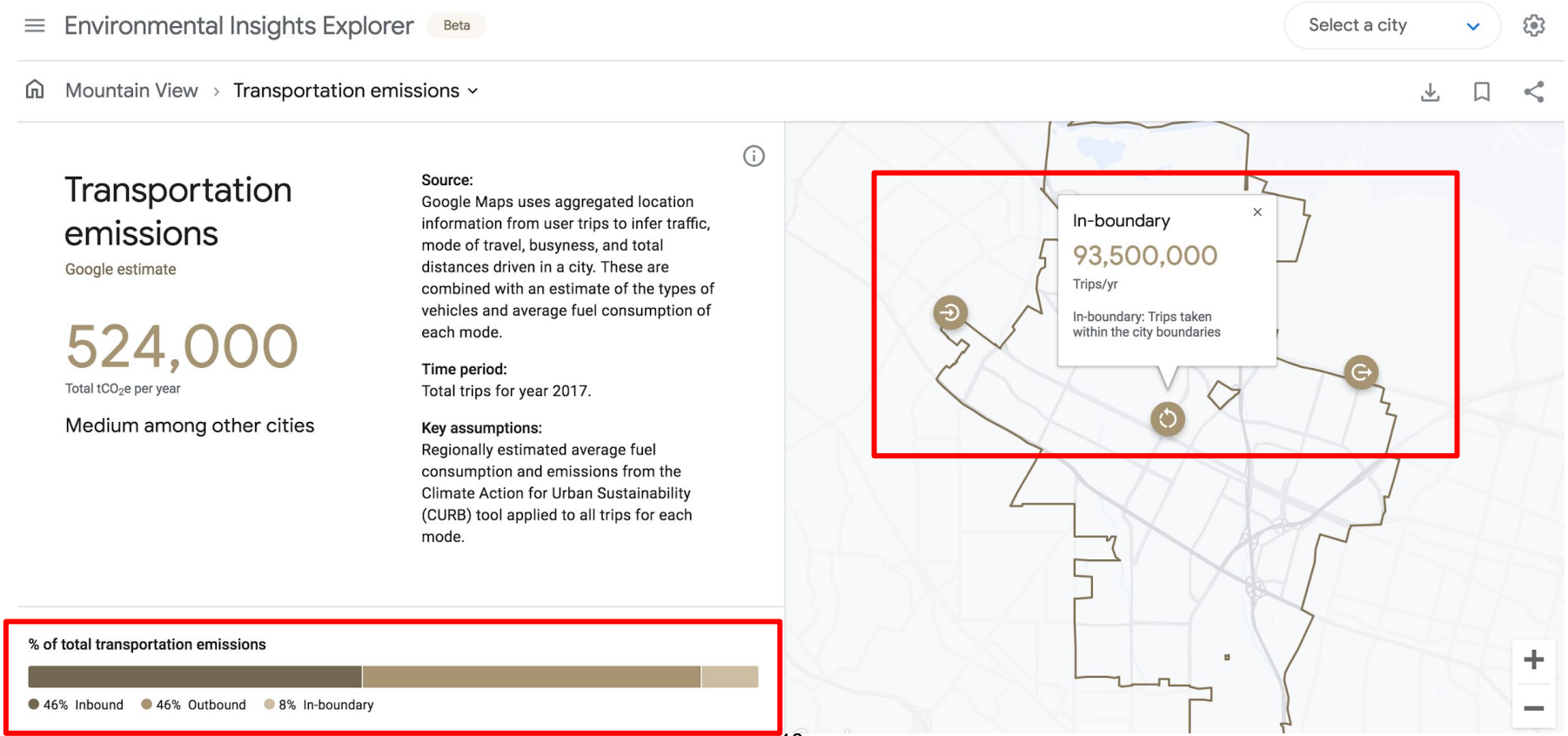
Precipitation
3 day decrease in wet days projected

Cold days
0 day decrease in cold days projected

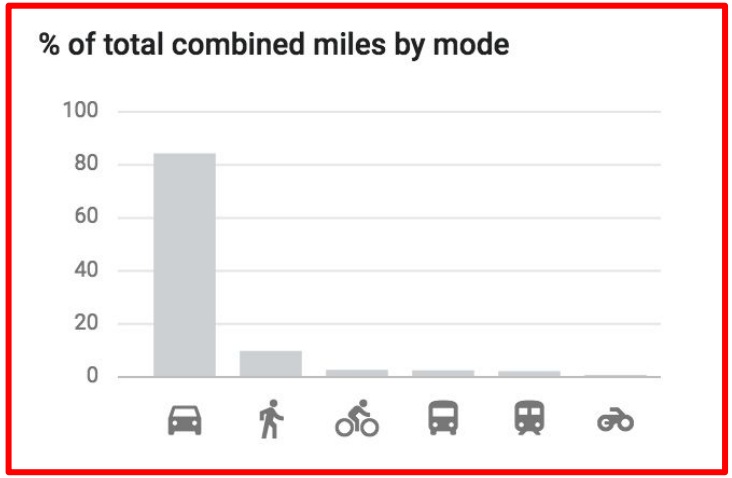
The projected future days of heat will be similar to present day in Cape Town, South Africa



Transportation



Trips and Distance by Mode



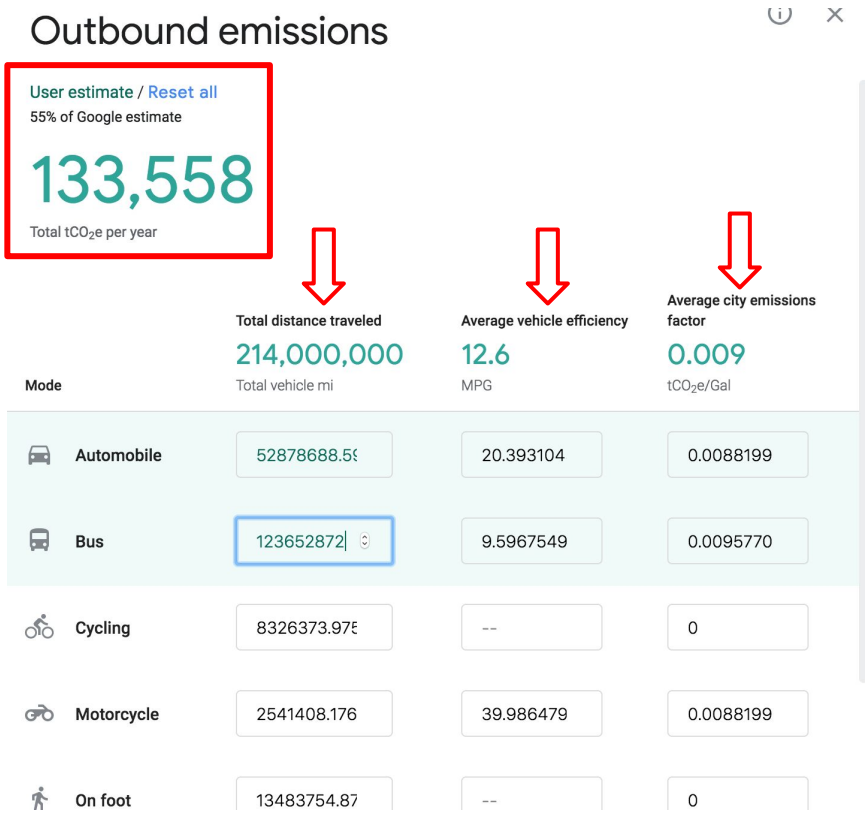
Total combined # of trips

221,000,000

Total combined vehicle miles traveled

1,360,000,000

“What if?” Analysis



- Adjustable data values allow cities to explore how policies might affect emissions along mode shift, fuel efficiency and electrification strategies
- Allows city to modify/augment cases where they have better data
- Customized inventories can be sent to stakeholders to encourage dialogue or to tell a story

Potential for Solar Offset

Select a city

Existing solar arrays

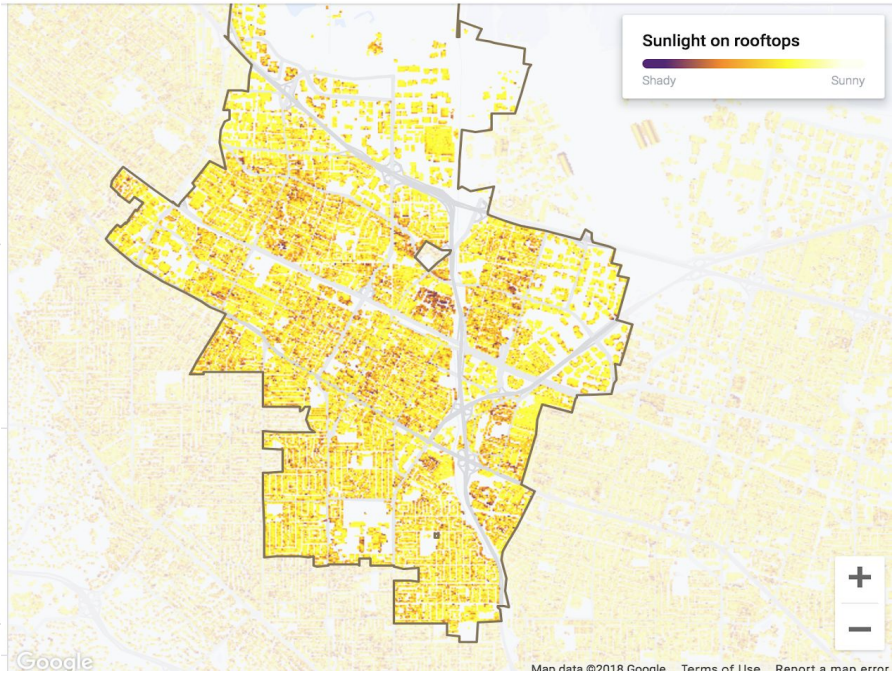
1,003
Solar arrays

6%
Of total potential

Potential emissions reductions equivalent to

Passenger cars
50,100
taken off the road for 1 year

Tree seedlings
6,070,000
grown for 10 years



2019 Goals

- Scale to more cities across the globe
- Partnering with cities to continue refining and validating models for accuracy
- Add new datasets

Mountain View Uses of EIE

- A complement to our standard GHG inventory process
- Understand our **transportation** data in new ways
- Gain insights about potential for solar power
- Conduct “What if...” analysis toward making more informed policy and program decisions

Acknowledgments - Google

Core Team

- Christopher Bian
- Minyoung Lee
- Debbie Sokol

Support Team

- Nick Cain
- Jen Carter
- James Driscoll
- Samantha Hennessey
- Rebecca Prozan
- Chris Sater

Acknowledgments - City of Mountain View

Core Team

- Steve Attinger
- Erin Brewster
- Hannah Perkins

Support Team

- Eric Anderson (Planning)
- Hollis Burnette
- Nancy Doan
- Nancy Ducos
- Scott Estes
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- Skip Gildea
- Tom Louie
- Jason Pedersen
- Audrey Ramberg
- Dan Rich
- Nirmal Sajjan
- Lori Topley
- Antoinette Wilson

“...we are already seeing the consequences of 1° C of global warming through more extreme weather, rising sea levels and diminishing Arctic sea ice, among other changes.”

IPCC Report SR 1.5, October 2018

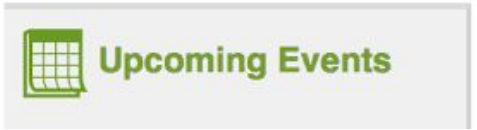
Conclusion

- **Climate Change** - the greatest challenge we face
- **Civic Leadership Project** - results beyond expectations
  - *Much cheaper, quicker, and more consistent GHG inventories*
  - *A better understanding of the outlook and barriers of community members*
- **Environmental Insights Explorer** - help Google refine further
- **Impact at Scale** - share insights across the country
- **Google Partnership** - identify other areas for collaboration

*Source

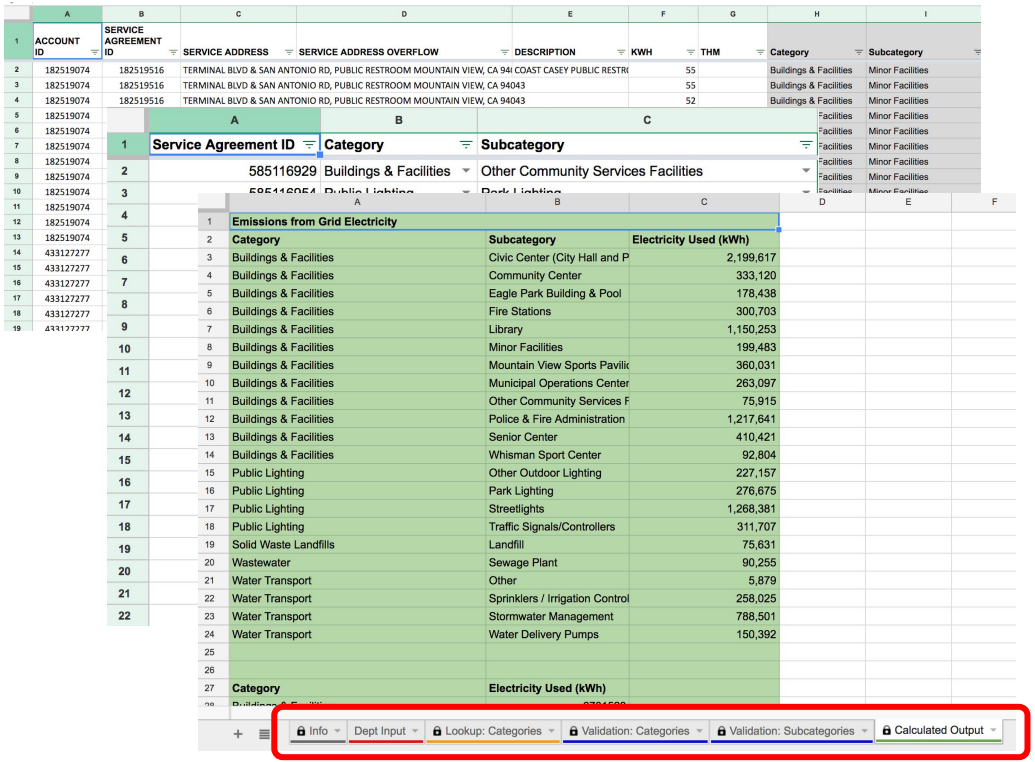
Upcoming Events

- FREE Workshop for Homeowners
  "Energy Efficiency Rebates and Incentives"
  November 29, 2018, 6:30 p.m.



- City Council Meeting
  Review "Environmental Sustainability Task Force" recommendations
  December 4, 2018, 6:30 p.m.

Appendix

Data Source Templates

Spreadsheet Tab	Purpose
Info	Documentation
Dept Input	Consistent input format for raw data
Validation	Reduces human error
Category Lookup	Automate time consuming categorization
Variables	Transparent, easy to understand calculations
Calculated Output	Ready for ClearPath