



We Are Columbia

**COLUMBIA ENVIRONMENT AND INFRASTRUCTURE COMMITTEE MEETING
AGENDA
TUESDAY, FEBRUARY 2, 2021**

The Columbia Environment and Infrastructure Committee will conduct a meeting on Tuesday, February 2, 2021 at 10:00 a.m. using Video Conferencing Technology. The meeting will be streamed online at www.columbiasc.gov.

CALL TO ORDER

COMMITTEE DISCUSSION

1. Columbia's Climate Protection Action Committee Progress Report - Ms. Mary Pat Baldauf, Sustainability Administrator for the Public Works Department and Dr. Lori A. Ziolkowski, CPAC Chair
2. Dominion Energy Lighting Conversion Program - Mr. Robert Anderson, Public Works Director and Mr. John Cadena, Manager of Economic Development and Local Government for Dominion Energy

ADJOURNMENT



We Are Columbia

MEETING DATE: February 2, 2021

DEPARTMENT: City Clerk

FROM: *Erika Hammond, City Clerk*

SUBJECT: Columbia's Climate Protection Action Committee Progress Report - Ms. Mary Pat Baldauf, Sustainability Administrator for the Public Works Department and Dr. Lori A. Ziolkowski, CPAC Chair

FUNDING SOURCE & ORIGINAL BUDGET:

ATTACHMENTS:

- CPAC Presentation (PDF)

Columbia's Climate Protection Action Committee (CPAC)

Progress report and looking forward



Attachment: CPAC Presentation (6468 : CPAC Update)

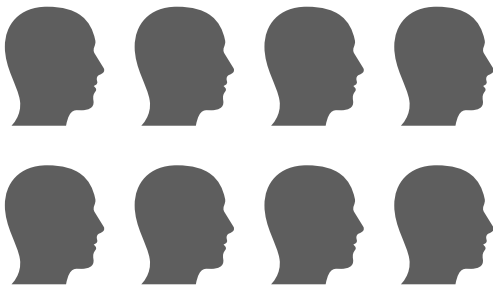
Dr. Lori Z(iolkowski) - chair of CPAC

email: loriz@sc.edu

Prepared for the City of Columbia Environment and Infrastructure committee meeting Feb 2, 2021.

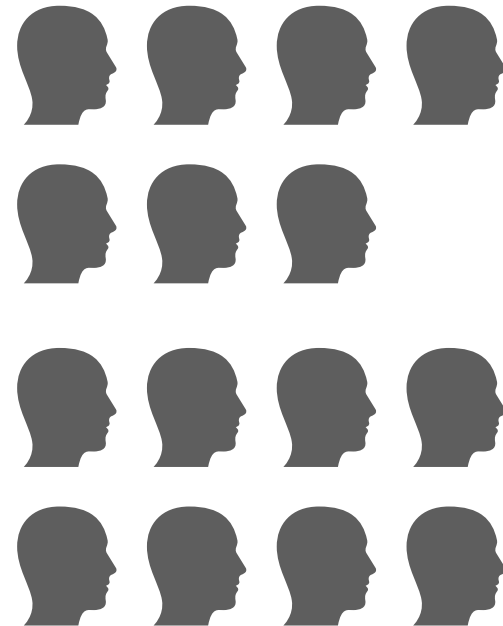
Bylaws highlighted change 1 of 2: Updated seat number and appointment details.

Old bylaws



8 seats
All voting members
Each tied to a district

New bylaws



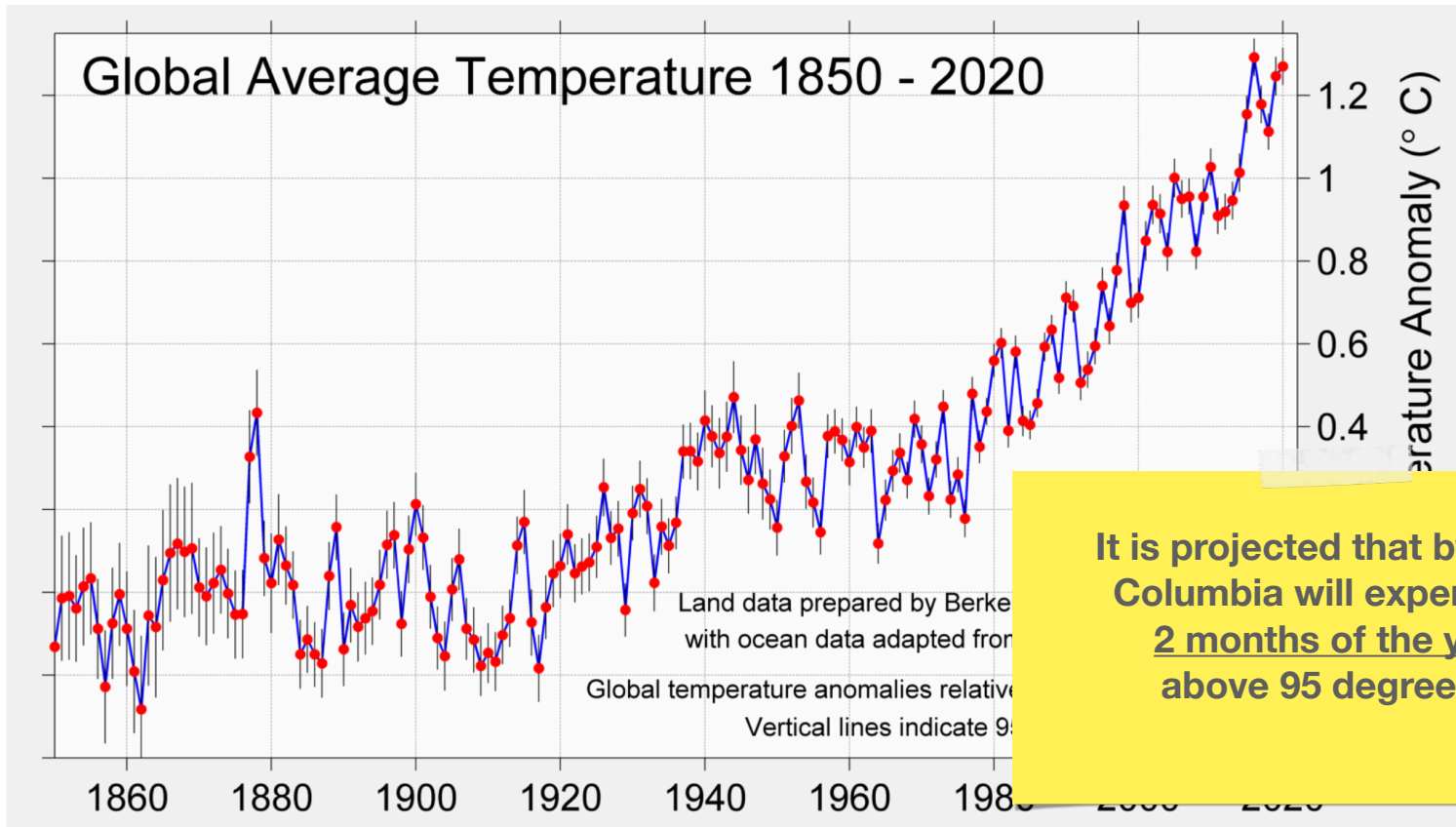
7 voting members
Up to 8 non-voting members
Not tied to a district
Clarity on length of term

Why the changes?
Odd number = no tie votes
More members to get more things done!
Not tied to districts to recruit subject matter experts.

Bylaws highlighted change 2 of 2: Updated CPAC's mission

CPAC's Mission:to develop and advocate for effective strategies to mitigate greenhouse gas emissions, adapt to climate change, conserve natural resources, and otherwise protect the environment at a City level, while also fostering an improved quality of life for the citizens of the City of Columbia.

2020 was 2nd hottest year on record



Attachment: CPAC Presentation (6468 : CPAC Update)

Temperatures are rising due to our emissions of greenhouse gases Carbon dioxide (CO₂), methane (CH₄), and Nitrous Oxide (N₂O)

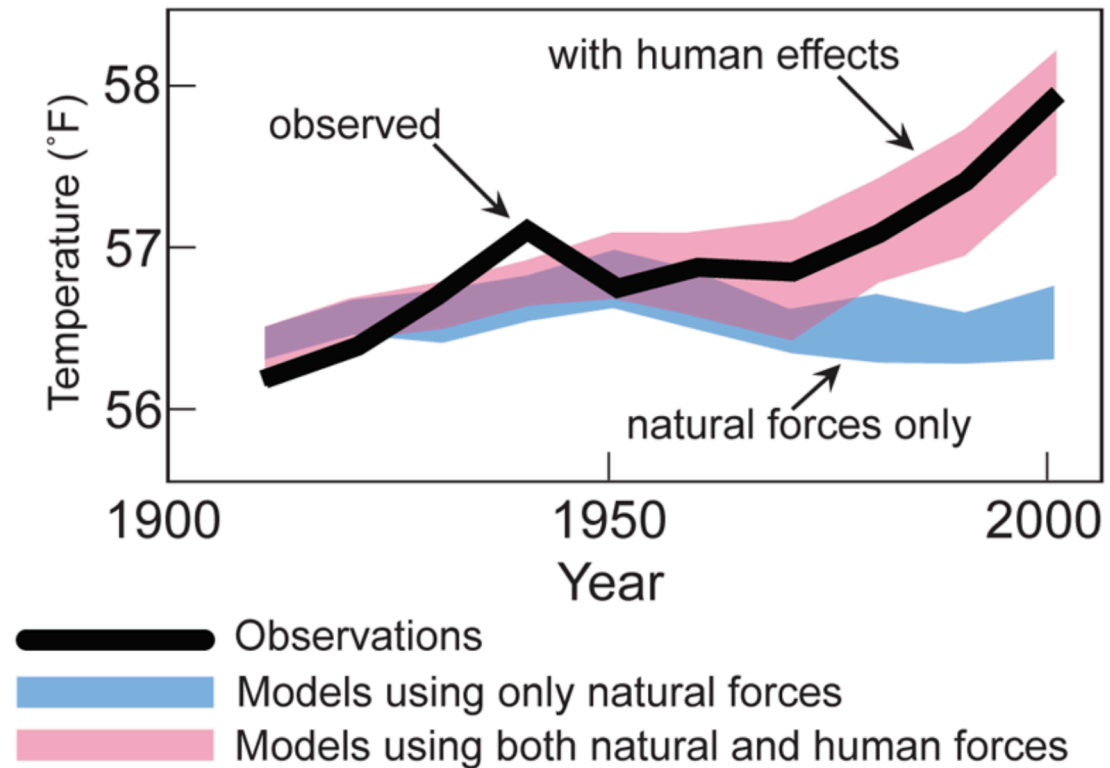
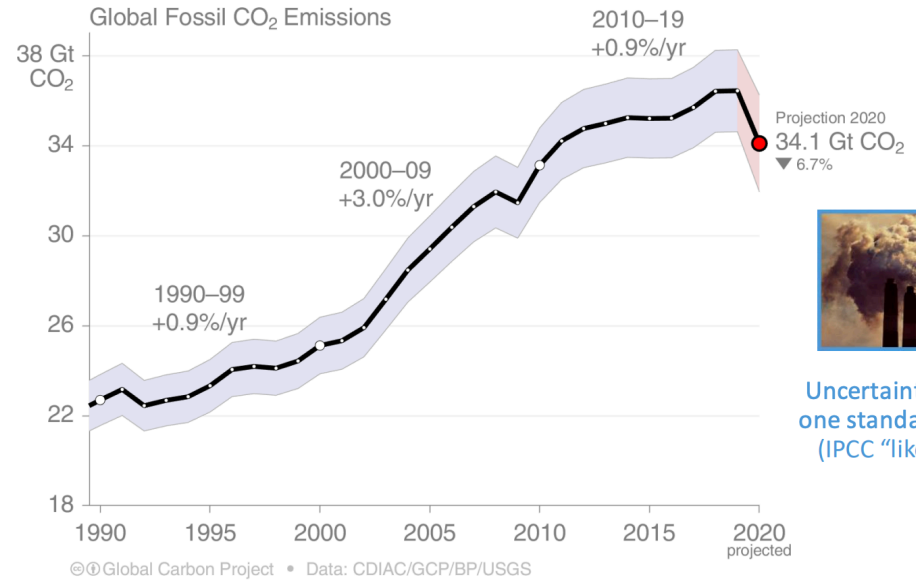
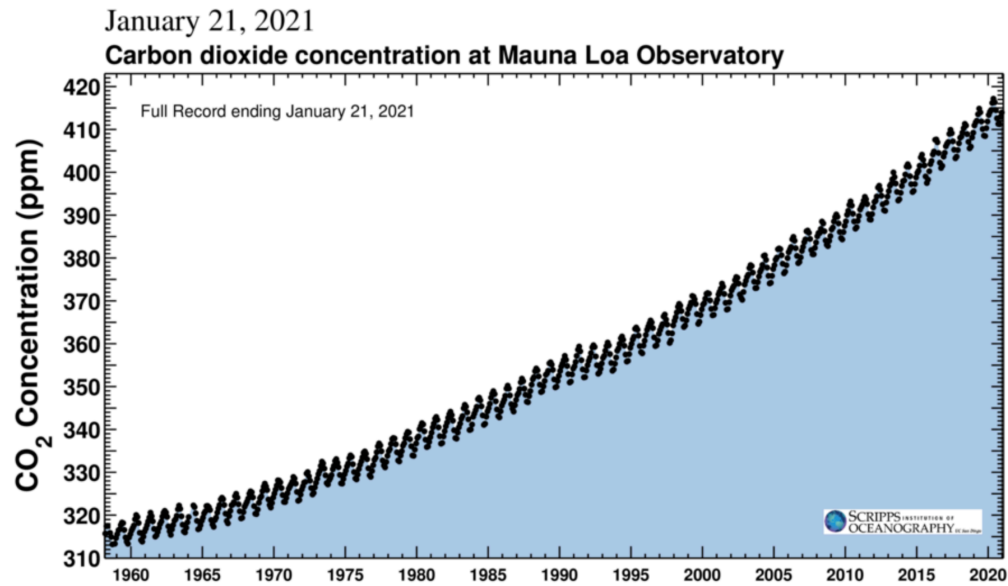


Figure from the IPCC's Fourth Assessment Report (Hegerl et al 2007).

Carbon dioxide in the atmosphere is still rising.

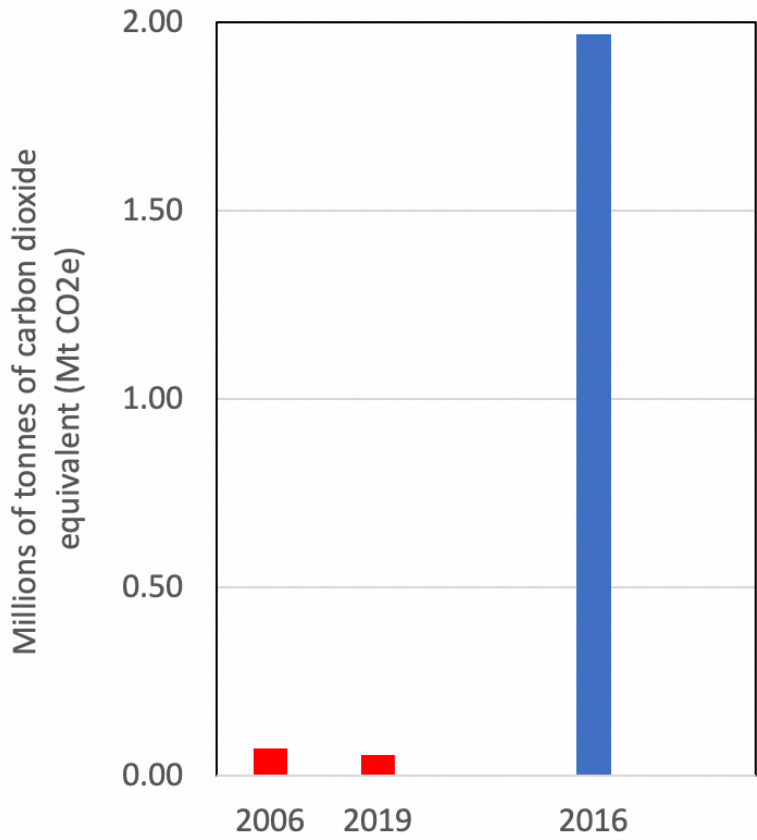
Until our annual CO₂ emissions go to zero CO₂ in atmosphere will continue to rise.



Until greenhouse gas emissions stop being emitted, the temperature will continue to rise.

Attachment: CPAC Presentation (6468 : CPAC Update)

What do Columbia's greenhouse gas emissions look like?



City government emissions:

- 1/36th of the community wide emissions.
- decreased by 21% from 2006 to 2019 based on water delivery and lighting upgrades.

Similar sized cities have seen larger decreases in emissions over same time period (~30%)

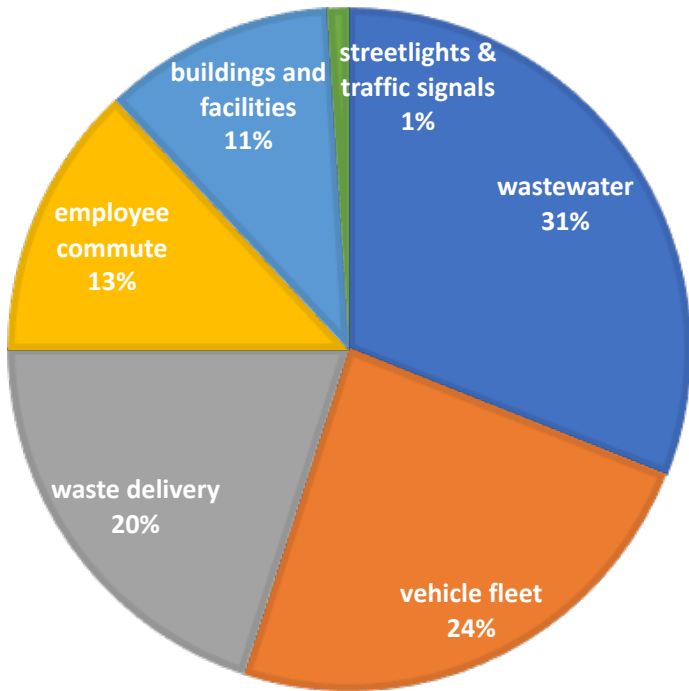
Focusing on community wide emissions reductions would have the largest impact.

To measure progress we need to start track these emissions on a regular basis.

Attachment: CPAC Presentation (6468 : CPAC Update)

What are the sources of these emissions?

56,800 Mt CO₂e



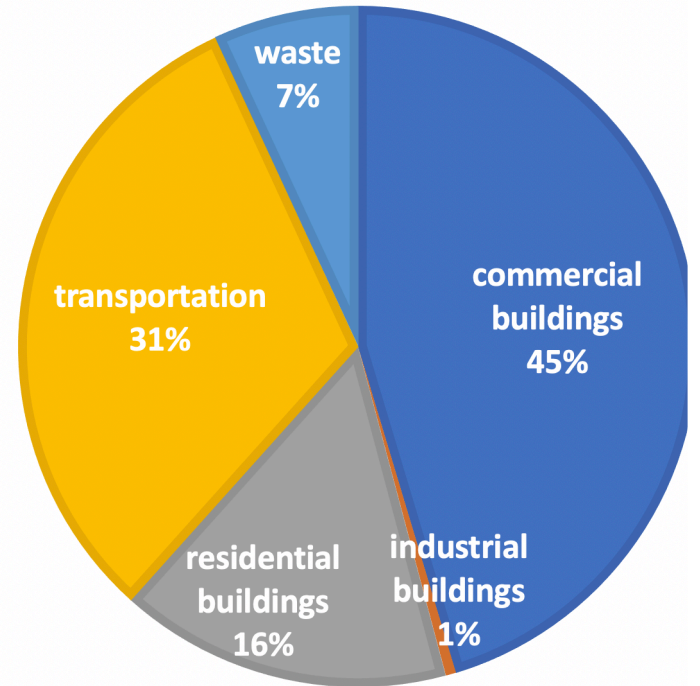
City government

How to reduce emissions for the city government are different than for the community.

City government:
reduce emissions from transport & water systems.

Community wide:
reduce emissions from buildings & then transport.

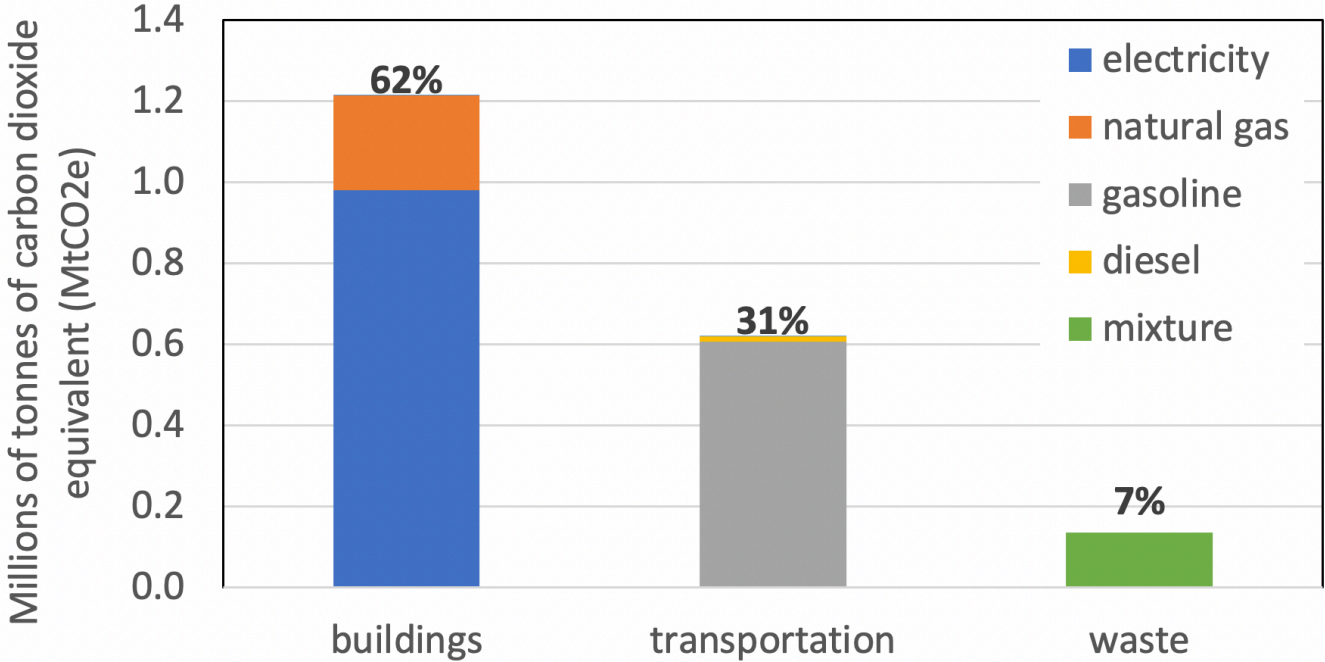
1,969,399 Mt CO₂e



Community wide

Attachment: CPAC Presentation (6468 : CPAC Update)

Community wide emissions by fuel source



Biggest source of emissions: electricity usage for buildings
2nd biggest source of emissions: gas powered vehicles

To summarize:

**It is getting warmer.
It is projected to continue to get warmer.
The warming is due to greenhouse gas emissions.**

The city government emits only a small fraction of the community wide emissions.

**Community wide most of these greenhouse gas emissions
are due to **electricity usage in buildings and driving gas powered vehicles.****

CPAC's Mission:to develop and advocate for effective strategies to mitigate greenhouse gas emissions, adapt to climate change, conserve natural resources, and otherwise protect the environment at a City level, while also **fostering an improved quality of life for the citizens of the City of Columbia.**

CPAC's ongoing work fall into two main categories

Reduce greenhouse gas emissions

Adapt to climate change

The committee has been focused on community wide efforts to improve the livability and affordability for all Columbians

Attachment: CPAC Presentation (6468 : CPAC Update)

Reduce greenhouse gas emissions

Reduce energy usage

Change how we generate electricity

Future goal:
Electrify transport

**Reduce greenhouse
gas emissions**

Reduce energy usage

**Change how we
generate electricity**

**Outreach on incentive
and loan programs**

**Energy labelling for
real estate & rentals**

Reduce greenhouse gas emissions

Reduce energy usage

Change how we generate electricity

Outreach on incentive and loan programs

Work with Dominion (& PSC) to source renewables

Energy labelling for real estate & rentals

Energy consultant (via Sierra Club) to advise on Ready for 100

Adapt to climate change

Prepare for more
extreme heat

Future goal: integrative
planning for more
intense rainfall

Adapt to climate change

**Prepare for more
extreme heat**

**Help keep more
citizens cool**

**Use heat vulnerability to
guide tree planting**

Reduce greenhouse gas emissions

**As of Jan 2021
Ongoing CPAC efforts**

Specific details of each will be presented on Feb 2, 2021.

Adapt to climate change

Reduce energy usage

Change how we generate electricity

Prepare for more extreme heat

Outreach on incentive and loan programs

Work with Dominion (& PSC) to source renewables

Help keep more citizens cool

Energy labelling for real estate & rentals

Energy consultant (via Sierra Club) to advise on Ready for 100

Use heat vulnerability to guide tree planting

Attachment: CPAC Presentation (6468 : CPAC Update)

Longer term goals:

As of Jan 2021
Ongoing CPAC efforts

Reduce greenhouse gas emissions	Adapt to climate change
Reduce energy usage	Prepare for more extreme heat
Outreach on incentive and loan programs	Help keep more citizens cool
Energy labelling for real estate & rentals	Use heat vulnerability to guide tree planting
Change how we generate electricity	
Work with Dominion (& PSC) to source renewables	
Energy consultant (via Sierra Club) to advise on Ready for 100	



Develop a **community wide climate action plan** that we can use to measure progress and engage with the public.



Provide framework for and make progress towards zero carbon emissions community wide by 2036

Attachment: CPAC Presentation (6468 : CPAC Update)

End.

More specifics will be included at Feb 2nd meeting.



We Are Columbia

MEETING DATE: February 2, 2021

DEPARTMENT: City Clerk

FROM: *Erika Hammond, City Clerk*

SUBJECT: **Dominion Energy Lighting Conversion Program - Mr. Robert Anderson, Public Works Director and Mr. John Cadena, Manager of Economic Development and Local Government for Dominion Energy**

FUNDING SOURCE & ORIGINAL BUDGET:

ATTACHMENTS:

- Dominion Energy Presentation (PDF)

Conversion Program HID to LED



Background

- HID
 - High Pressure Sodium – Orange
 - Metal Halide – White
 - Mercury Vapor – Blue, Green
- LED
 - White light
- Differences in HID and LED Technologies
 - Bulb
 - Solid State



Uniformity (Less Shadows)

2.a



Attachment: Dominion Energy Presentation (6469 : Dominion Energy Lighting Conversion

Color Impact



HPS Application



LED Application

Concept

- Need - Municipalities want to move to LED
- Issue - LED pricing still more expensive than HID
- Solution - LED Rate 17 Street Light conversion contract with incentives



Eligible Fixtures

- Rate 17 – Municipal Street Lighting
 - Existing and New
 - OH fed on wooden poles
 - UG fed roadway
 - No decorative



Exhibit A

Customer	City of Columbia									
Date	1/14/2021									
Quantity	LED Light Fixture	Current LED Cost/Month	HID Light Fixture	Current HID Cost/Month	Wattage Savings (Per Fixture)	Incentive per Month (Per Fixture)	Incentive per Month (Total)	Net Customer Cost/Month	Savings per Month	Annual kW Savings
888	ATB0 Grey 72w	\$ 10,957.92	175W MV OPEN	\$ 7,983.12	140	\$ 3.10	\$ 2,752.80	\$ 8,205.12	\$ (222.00)	497,280
101	ATB0 Grey 72w	\$ 1,246.34	100W HPS OPEN	\$ 926.17	46	\$ 3.10	\$ 313.10	\$ 933.24	\$ (7.07)	18,584
3762	ATB0 Grey 72w	\$ 46,423.08	150W HPS OPEN	\$ 37,883.34	99	\$ 3.10	\$ 11,662.20	\$ 34,760.88	\$ 3,122.46	1,489,752
13	ATB0 Grey 72w	\$ 160.42	175W MV CBRA OH	\$ 132.60	140	\$ 3.10	\$ 40.30	\$ 120.12	\$ 12.48	7,280
30	ATB0 Grey 72w	\$ 370.20	100W HPS CBRA OH	\$ 297.60	46	\$ 3.10	\$ 93.00	\$ 277.20	\$ 20.40	5,520
673	ATB0 Grey 72w	\$ 8,304.82	150W HPS COBRA	\$ 6,904.98	99	\$ 3.10	\$ 2,086.30	\$ 6,218.52	\$ 686.46	266,508
57	ATB0 Grey 108w	\$ 779.19	250W MV COBRA	\$ 781.47	184	\$ 0.52	\$ 29.64	\$ 749.55	\$ 31.92	41,952
606	ATB2 Grey 216w	\$ 12,162.42	360W HPS COBRA	\$ 10,429.26	203	\$ 4.33	\$ 2,623.98	\$ 9,538.44	\$ 890.82	492,072
339	ATB2 Grey 216w	\$ 6,803.73	400W MV CLSD-OH	\$ 5,742.66	251	\$ 4.33	\$ 1,467.87	\$ 5,335.86	\$ 406.80	340,356
1603	ATB2 Grey 216w	\$ 32,172.21	400W HPS COBRA	\$ 28,629.58	248	\$ 4.33	\$ 6,940.99	\$ 25,231.22	\$ 3,398.36	1,590,176
8072		\$119,380.33		\$ 99,710.78			\$ 28,010.18	\$ 91,370.15	\$ 8,340.63	4,749,480

Contract Details

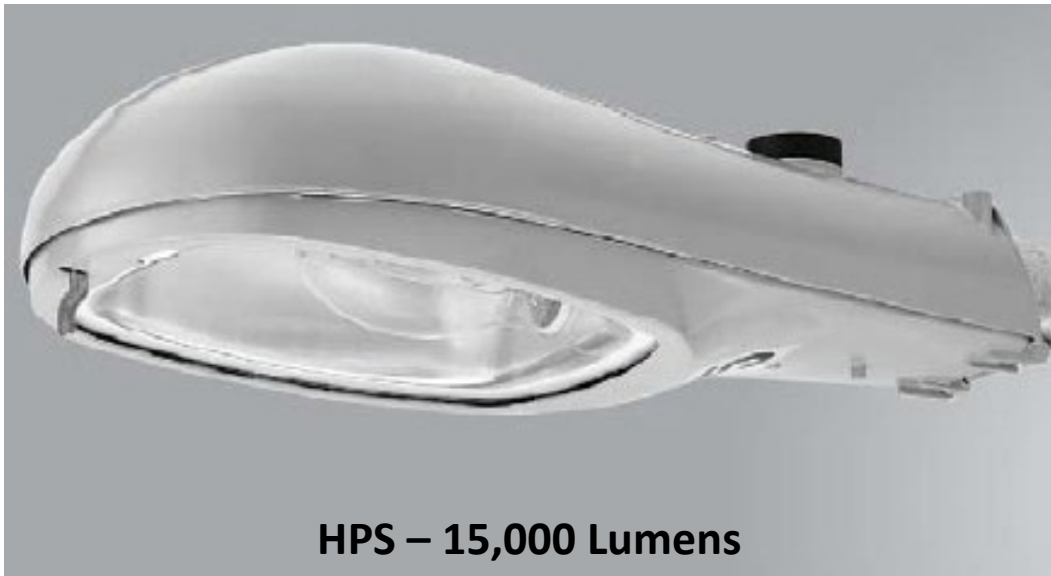
- 10-year contract
- 5-year incentive to reduce the LED monthly cost
- Assumption - End of 5 years, LED non-incentive rate will be lower than HID - HID cost rising, LED steady or decreasing
- Incentives may be lowered for future contracts
- Incentive amounts at time of contract continue for full 5 years

Advantages

- Better quality lighting
 - Uniform (less shadows)
 - Color Impact closer to daylight
- At or below current total monthly cost
- Ability to add additional lighting at same monthly cost
- No upfront charges
- **Communicating Node**
 - **Automatic notification of failure**
 - **Future – On/Off capabilities**
 - **Future – Dimming capabilities**



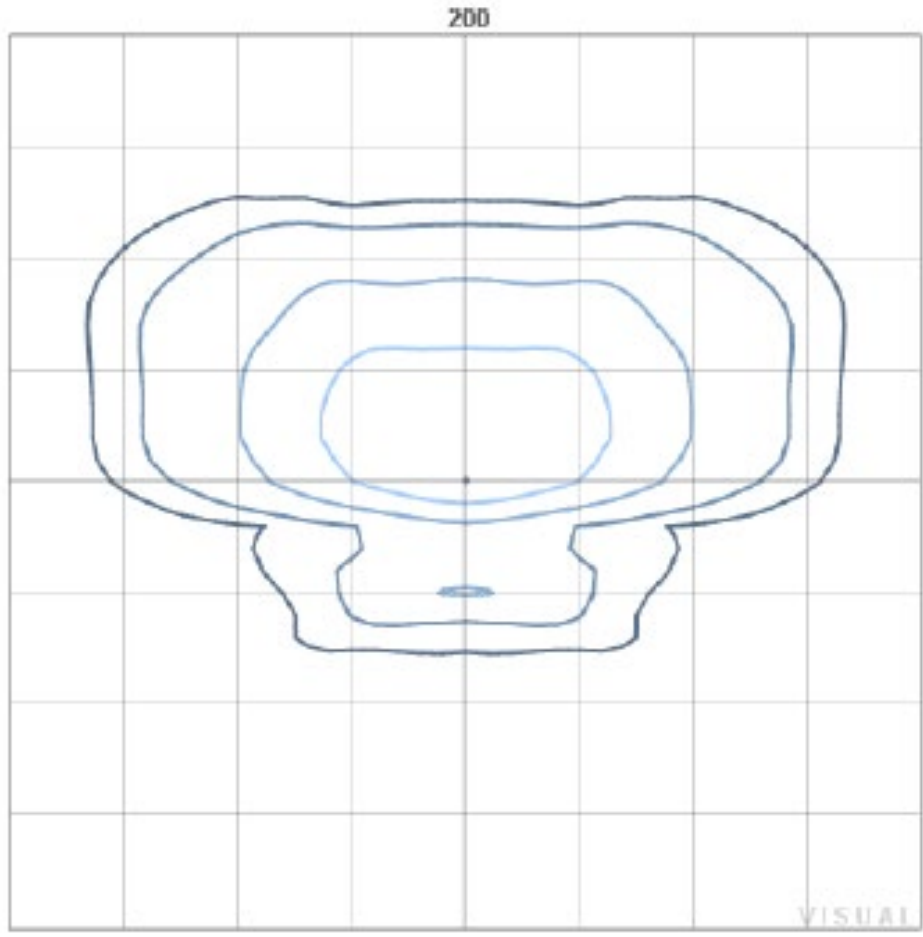
Comparable Fixtures



HPS – 15,000 Lumens



LED – 8,600 Lumens



Roadway Pattern

Attachment: Dominion Energy Presentation (6469 : Dominion Energy Lighting Conversion

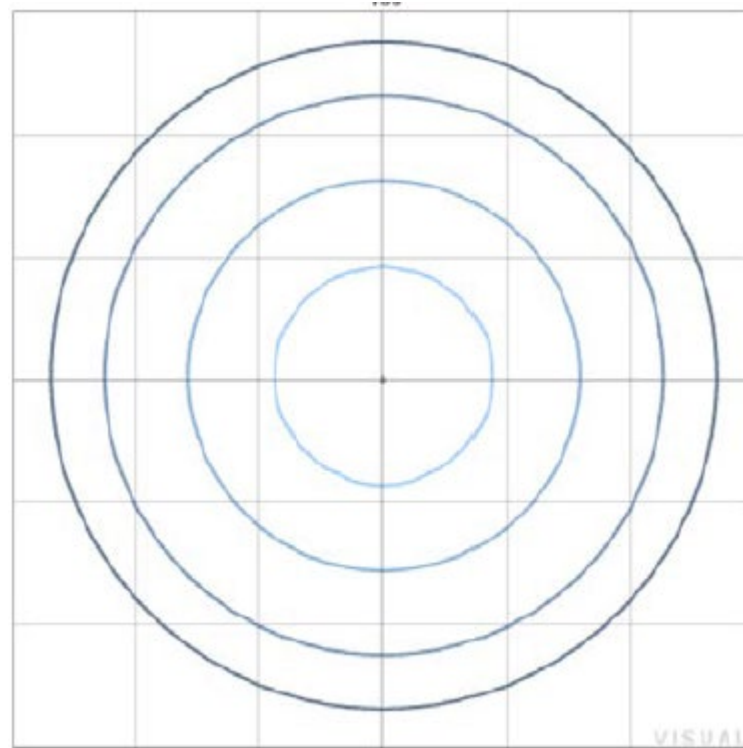
Comparable Fixtures



HPS – 15,000 Lumens



LED – 8,000 Lumens

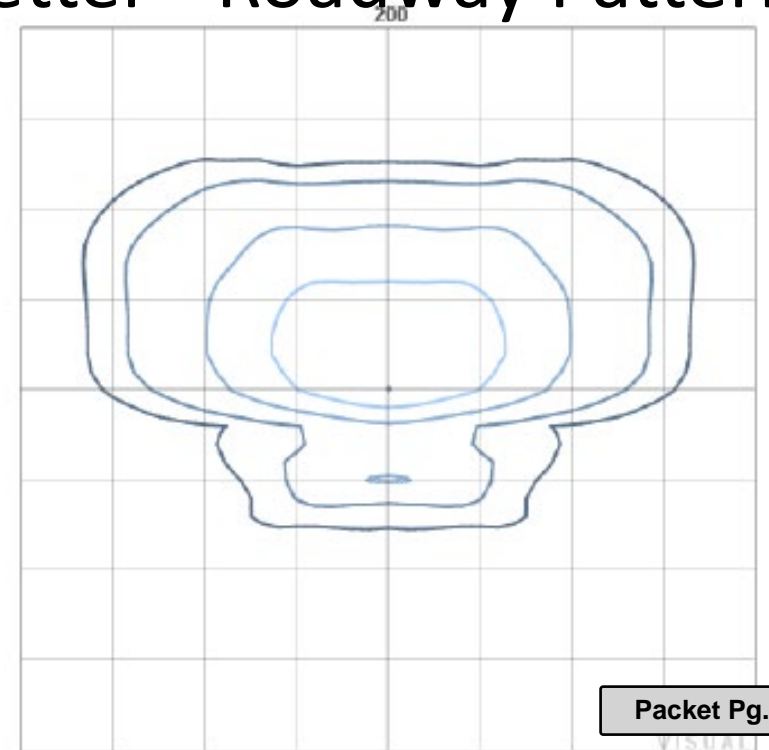


Private Light Pattern



LED – 8,600 Lumens

Better - Roadway Pattern



Deployment Details

- Getting contracts now
- Full deployment starting 1st Quarter 2021
- May take some months to get to you and complete



Next Step

- Contract
- Identify any additional lights wanted
- Identify lumen increase areas



Rate 17 Conversion Questions?



Conversion Program HID to LED

