Morgantown Municipal Green Team
Monday, February 4, 2019
5:30pm–7:00pm

Minutes

Attendees: Joe Kanosky (facilitator); Pam Cubberly (secretary); Jim Kotcon (Energy/CAP committees); Mark Brazaitis, Bill Kawecki, & Jenny Selin (City Council); and Dan Pan (notetaker).

January minutes had been sent to team members the previous week; No comments were returned so they are considered approved. Joe Kanosky agreed to facilitate the meeting.

UPDATES

Green Team's Annual Report to City
As part of the team's annual January presentation to the City Council on January 29 at its Committee of the Whole, Jim reviewed the team's 2018 Annual Report, which was well received.

Climate Action Plan (CAP) Working Group and Energy Committee
At the same meeting, Jim also explained the draft CAP (attached) in detail, noting that the team still needs specific past data from the City on its energy costs to assess City progress toward a 26%–28% reduction in carbon emissions by 2025. Nonetheless, he noted that, since 2005, the City had already made significant progress, so by following the top measures in the proposed CAP, the 2025 goal appears reachable.

A major approach to actually achieving this goal, he said to Council is increasing the 2019 City budget to implement the 2016 WVU IAC energy audit recommendations to $50,000, as the payback period will be high and yearly savings great.

> *Action:* Pam will send City Councilors (1) the executive summary of the 2016 IAC report with a table of potential energy and cost savings, total investment, payback period, and annual savings thereafter, and (2) a copy of the report's table of contents, which lists the IAC recommendations by building.
>
> *Action:* The committee will review the final 2017 IAC report in order to provide the most accurate data to the City on investment and paybacks.
>
> *Action:* Once City approves 2019-20 budget on IAC-recommended work, Jim & Joe will put together priority options for 2019-20 and explore with the City a staff member or contractor to take on tasks selected for this fiscal year.

Kevin Apreku, the team's new energy research intern, who will report weekly to Jim, has discussed with Jim and Pam details on data needed to make the CAP more accurate and who would be the best City source.

> *Action:* Kevin will set up a meeting with Paul Brake and Jim this week to launch his research for CAP data and to meet key City staff through a tour by Carol Allen.

Pam reported that Paul Brake said the City is considering both LEDs and solar energy for lamps used in the MRTC rail-trail lights near the Wharf, funded by new federal grant money.

No February CAP meeting is yet planned but Jim will notify team members of any set up.

Reduce/Reuse/Recycle Committee:
<u>WV Recycling Assistance Grant Proposal.</u> Pam gave a verbal description of the working draft of a REAP grant proposal for WV recycling assistance, as she could not access the PowerPoint presentation to Council using the library's Internet.

The overall goal of the proposal: a major focus is to increase the amount of recycling and decrease contamination of recycling containers community-wide. Two major components would be a broad, professional public education/media campaign using traditional and online/social media, as well as innovative ideas such as a recycling app integrated into the City's Recycling webpage. This campaign would support the grant proposal's core program: an Anti-Contamination Campaign using a model developed by the Recycling Partnership in Wisconsin and adapted to a broad range of cities across the United States with great success. A third component addresses special populations (schools, businesses, and students in off-campus housing).

Research on a range of volunteer and funded human resources demonstrates that the team/City are on top of how to implement grant activities. The team had already discussed WVU resources (master's-level internships or class projects) in several WVU offices and departments and identified a number of other resources to pursue (e.g., Reed College of Media and Center for Service and Learning).

After gaining City input on this evolving grant proposal, the team plans to meet soon thereafter with Republic Services, especially on the Anti-Contamination Campaign. The City grants writer must complete the grant proposal by the end of April to leave enough time for the Mon County Solid Waste Authority to review and approve the grant proposal, as required by grant guidance. The grant proposal is due by the end of June. If funded, implementation of the grant will be begin in January 2020 through February 2021.

Actions:

- Pam, Vanessa, and Jim will present a working grant proposal (as a PowerPoint) to key City staff (Paul Brake, Andrew Stacy, and Robyn Hess) on February 20 to get their input and buy-in before presentation to Republic Services.
- The Reduce/Reuse/Recycle (RRR) committee will continue to develop a coherent/well-resourced grant proposal with convincing details and specific community-based support (incl. expertise from WVU, etc.)

<u>New Republic online document</u>. Pam also reported on a request from Paul Brake to review a 5-page PDF document from Republic Services that turned out to combine two existing info pieces on the City Recycling webpage. The new piece is entitled "Morgantown 2019 Recycling and Waste Service Guide." Pam is asking for clarification and relevant information from John McGoran so that the team only needs mark up the copy with actual needed edits.

Action: Pam will send the marked-up copy to team members before returning a final to John McGoran.

<u>New Business</u>

Green Space. Bill said the Morgantown Land Reuse and Preservation Agency had already had one meeting. The Urban Land Commission is requesting information and is willing to work with this agency once the commission knows what the agency says what it will do. Bill was happy with the talent in the new agency.

On other topics, Jenny wondered if the team could send a letter of support for the trail proposed by the Green Space Coalition. Pam had already pursued this with Ella Belling who attends Green Team meetings and understands the issue.

Action: Pam will follow up with Ella Belling.

The meeting adjourned at 7:00pm. Thanks to Dan Pan for taking notes.

Proposed Climate Action Plan Ideas and Proposals to Implement the Resolution in Support of the Paris Climate Agreement.

Morgantown Green Team

January 29, 2019

On August 2, 2017, the City of Morgantown adopted a Resolution in support of the 2015 Paris Climate Agreement, as proposed by the National Mayors Climate Action Agenda. That Agreement set a goal of 26% to 28% reduction in greenhouse gas [GHG] emissions by 2025. Despite President Trump's statement that the US will withdraw from the Agreement, the City of Morgantown joined American cities and states and countries around the world to reaffirm their commitment to the Agreement. The Resolution specified that the City commit to develop and implement a "Climate Action Plan" to reduce greenhouse gas emissions, and would encourage "other commercial, residential and public sectors to seek reductions in greenhouse gas emissions."

Morgantown City Council and the City Manager asked the Morgantown Municipal Green Team (MMGT) to propose a Climate Action Plan. This Morgantown Climate Action Plan proposes to meet Morgantown's share of the Paris Agreement's objectives by reducing greenhouse gas emissions from municipal facilities by 26-28 % compared to the 2005 baseline.

The proposed Plan distinguishes emissions from City-owned Municipal facilities versus those from the larger residential, commercial, and other public sectors (Community-wide sectors). We recommend that, to fulfill the City's commitment, the City of Morgantown take proactive steps to reduce Municipal emissions, while identifying incentives and voluntary programs to encourage reductions in the Community-wide sectors for the City as a whole.

Greenhouse Gas Inventory

The MMGT is unaware of any comprehensive greenhouse gas inventory to determine Community-wide emissions for Morgantown as a whole in 2005. In 2014, a cooperative effort by the City and Downstream Strategies, completed a greenhouse gas inventory for Morgantown (Simcoe et al. 2014). That report developed two estimates, one based on greenhouse gas sources within the City, the other based on expected emissions from City-wide activity measures. Source-based emissions were estimated as 691,573 MT CO2e, while activity-based emissions were estimated as 805, 694 MT CO2e.

For purposes of this Climate Action Plan, developing estimates of the 2005 baseline emissions from the 2014 study could be achieved by applying known changes in Morgantown's municipal facilities, policies and programs since 2005; however this would require either dedicated staff time or a consultant and was considered beyond the scope of the Green Team. Since City Council has limits on the kinds of statutory requirements that can be impose on the private sector, we recommend that efforts might be better spent developing voluntary incentives and moving proactively to encourage actions by the Community-wide sector.

However, a review of City electric, gas and vehicle fuel bills from Municipal facilities was conducted by volunteers in 2007 and produced an estimate of 7809 Tons CO2e/year for 2005 (Table 1). This included electric consumption from 35 separate electric meters, as well as natural gas for building heating, and gasoline and diesel fuel bills from the City fleet. While this represents only about 1 % of Community-wide sector emissions, it is under the direct control of City Council and the City Manager.

We believe that this is the appropriate target for applying the Climate Action Plan emissions reductions outlined in the table below.

A more comprehensive inventory would need to consider a broad range of greenhouse gas sources, and carbon sequestration options. Two examples may illustrate the complexity of this:

1. The urban forest can sequester large amounts of carbon dioxide. Estimates from the WV Land Trust indicate that trees cover approximately 35 % of Morgantown, and sequester approximately 2,900 tons per year.

Source	**Units**	**Energy Use**	**Tons CO2e/year**
Electric consumption	kWh	5,126,397	5359
Natural Gas	MCF	10,156	613
Vehicles (gas)	Gal	147,871	1434
Vehicles (Diesel)	Gal	36,347	403
Total			**7809**

Table 1. Greenhouse Gas Budget in 2005. City of Morgantown.

2. At the same time, City street paving using asphalt is also very carbon intensive. Based on data from Chehovitts and Galehouse (2010), paving each mile of City street releases approximately 100 tons CO2e. (assume 2-inch thick asphalt at 28 ft-wide). (Calculated from Chehovits and Galehouse. 2010). While there are few practical alternatives to street paving, improved design and materials that would extend the life of a paved street by 28 % (e.g. from ~10 years to 13 years) would achieve a comparable reduction in emissions.

Greenhouse Gas Reduction Targets Applying the target of 28 % reductions from 2005, the required reductions are:

= 7809 Tons*0.28 = **2186 Tons CO2e per year**

Reductions Already Achieved

In 2009, the City entered into an Energy Services Contract with CLT (now Constellation) that generated significant energy savings. Energy Conservation Measures were installed in 15 City buildings, as well as in traffic signal upgrades. According to the 2014 Annual Measurement and Verification Report from Constellation, the Energy Conservation Measures installed were estimated to have saved 1,737,604 kWh or electricity, and 5,176 MCF of fuel. They estimate that this avoided the release of 1,472 tons CO2e, or 34 % of City electric consumption. However, their report did not evaluate the actual electric and fuel bills the City incurred. Acquisition of new equipment or increases in energy consumption are not reflected in the Constellation Energy report.

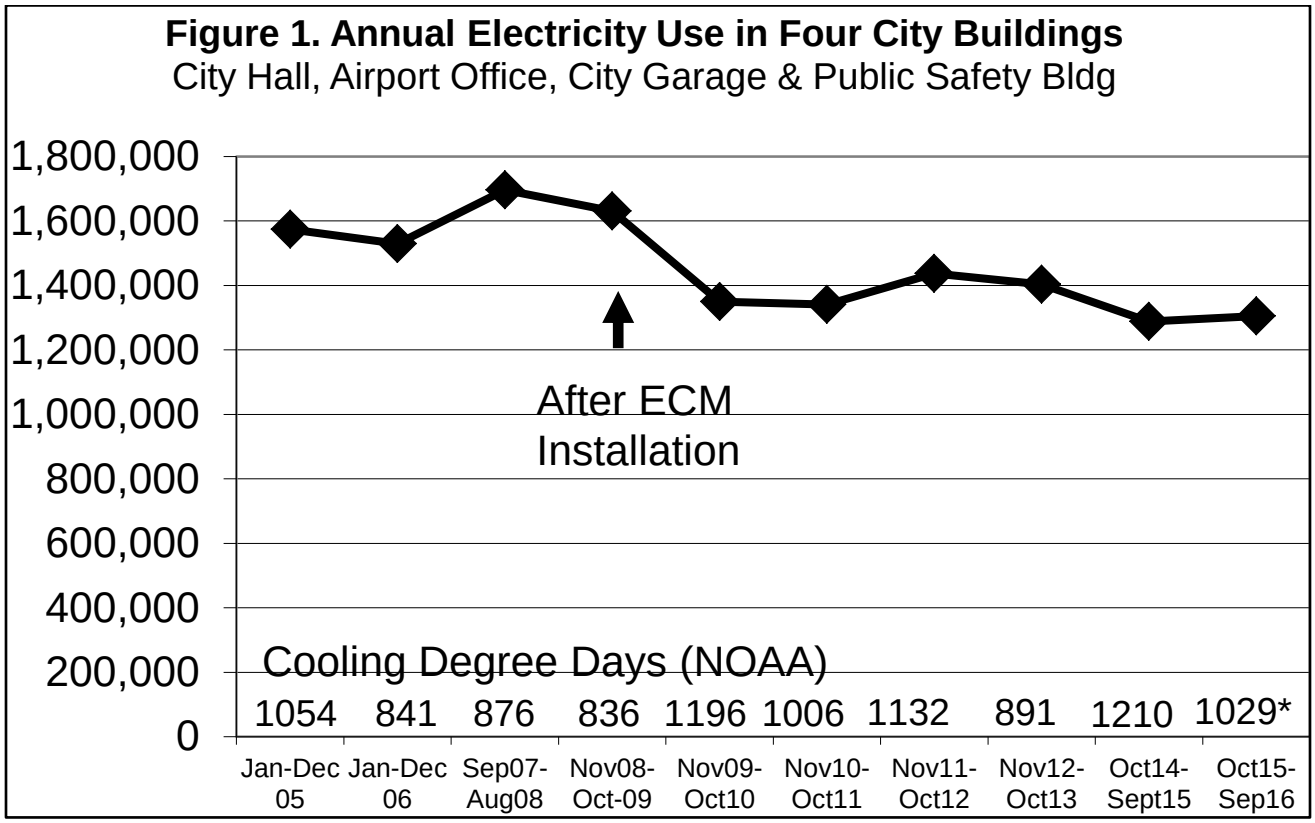
Based on our review of the actual energy bills paid by the City, the actual reduction in electric usage is approximately 15 %. This is determined by comparing electric consumption in four of the larger energy using facilities in the four years prior to installation of ECM, versus the six years following installation of ECMs (Figure 1 on next page).

Using the 15 % estimate of actual energy reduction for electricity, the reduction in greenhouse gas emissions is

= 0.15 * 5359 Tons/year = 848 Tons CO2e per year.

We were not able to acquire current natural gas bills for building heating, thus we cannot estimate any actual savings in building heating. The 2014 Annual Measurement and Verification Report from Constellation estimates savings as 5,176 MCF, equivalent to approximately 312 Tons CO2e per year. However, these estimates from Constellation refer only to the performance of their Energy Conservation Measures, and do not measure actual energy consumption in those buildings. The actual reductions may be significantly lower than the Constellation estimates, and until these can be validated by actual City bills, we do not include them.

Therefore, we estimate conservatively that the **additional reductions needed** to achieve the Morgantown Climate Action Plan goal is = 2186 – 848 = **1338 Tons CO2e per year** To meet these targets the Green Team evaluated a number of actions, and offer the following options for consideration.



Options for Additional Greenhouse Gas Reductions

Option 1. Implement IAC 2017 energy efficiency recommendations.

WVU's Industrial Assessment Center conducted energy efficiency assessments of several buildings in 2017 (City Hall, Public Safety Bldg., Woodburn, Maintenance Garage, and Signs & Signals buildings). Their report estimates that cost-effective upgrades could save 270,116 kWh of electricity = 266 Tons CO2e/year; and could save 540 MMBTU of gas = 32.6 Tons CO2e/Year. They estimated a total cost for all upgrades of $110,533. The payback period for these investments was approximately 3.0 years. The City has allocated $12,500 for the current fiscal year. The Green Team recommends an

allocation of $50,000 for next year's budget, and that these upgrades, if verified through vendor guarantees, be made expeditiously.

Option 2. Install LED street lights.

The City pays a fixed tariff for street lights, typically from $7-10 per pole per month, depending on the kind of street light fixture. We estimate that there are approximately 1700 street lights in Morgantown. Assuming that they operate 12 hours/day: Existing Sodium vapor lamps use ~ 1095 kWh/year. (*1700 = 1,861,500 kWH/year). LED Lamps use ~459 kWh/year (*1700 = 780,300 kWh/year). The Projected savings = 1,081200 kWh/year = ~1063 Tons CO2e/Year. To install LED street lights, a separate tariff for those lights must be determined by Mon Power, and approved by the WV Public Service Commission. Based on earlier discussions, a tariff for LED lights would not necessarily result in cost savings for the City, but would achieve significant reductions in greenhouse gas emissions, and would likely be enough to meet the 28 % target for greenhouse gas reductions from that source. A tariff for LED lights is unlikely to be available for a year or two, but the City should be able to pursue this option within the next 2-4 years.

Option 3. Install solar panels on City facilities.

We calculate that, to displace 28 % of the City's Municipal electric consumption would require 1,435,391 kWh of solar generation. Assuming a capacity factor of 25 %, we would need approximately 655 kW of solar panels. Assuming a cost for solar panels of $2.75 per watt, this would cost approximately $1.8 million. Depending on the interest rate, the payback time on this is about 40 years. However, if legislation to authorize Power Purchase Agreements is approved by the Legislature, the cost to the City for solar panels would be lowered as much as 20 %, and the payback period would be under 20 years, with panels guaranteed for 25 years, making this a cost-effective option, even with no further increases in electric rates. The City should consider this option within 2-5 years. Alternatively, if other options are implemented, a smaller solar array could be considered to supplement greenhouse gas reductions.

Option 4. Purchase of Green electricity credits (Renewable Energy Certificates, RECs).

Renewable Energy Credits are a very simple way to reduce the City's greenhouse gas footprint. Various vendors offer these Credits. These replace the current electric bill, with a slightly higher bill that subsidizes renewable electricity generation (wind or solar). The City would simply allocate funds to purchase an appropriate number of credits each year to offset a portion of current electricity use. The cost of these is variable, but has been dropping as renewable energy becomes cost-competitive with fossil fuel-based electricity generation. Because these costs vary with the market, the cost to the City was not estimated.

Option 5. Convert the City fleet to fuel efficient or electric vehicles.

The Green Team has not received an updated vehicle inventory since 2011, and it seems likely that many vehicles have been replaced during that period. Thus, the costs and benefits could not be estimated. In addition, many City vehicles are special use vehicles (fire trucks, snow plows, police cruisers, etc.) where fuel efficient or electric vehicles are not options. However, the City could adopt purchasing policies to direct the fuel efficiency be considered in purchase decisions, especially for routine passenger uses.

Options for Encouraging Greenhouse Gas Reductions from the Community-Wide Sector

1. Provide incentives for renewable energy sources
2. Encourage carbon sequestration through tree planting in public and private lands.
3. Revise City zoning and transportation plans to reduce vehicle miles traveled, encourage bicycles and pedestrian travel, and promote mass transit.
4. Support local businesses in adopting energy efficiency projects (LEEP).
5. Create safe cycling transportation areas around city to make cycling a viable option for transportation to and from large employers in the city (WVU, DOE, NIOSH, Mon General, Mylan, etc.)
6. Consider hiring a full time Energy Manager
7. Increase recycling and composting efforts for solid waste management.
8. Provide incentives to malls and large parking areas on private/commercial sites to install LED lighting.
9. Acquire more efficient and cleaner City buses for MountainLine
10. Expand bus routes to reduce auto traffic.
11. Install Park-and-Ride lots to encourage commuters to use bus services.
12. Integrate bikes with buses and rail trail (this needs some clarification)
13. Have the City provide incentives for green building standards.
14. Provide education to City residents and in schools on ways to reduce carbon emissions.
15. Identify cleaner alternatives for small engines (leaf blowers, lawn mowers, etc.)
16. Promote water conservation (work with MUB?)
17. Switch parking garage lights from T-8 fluorescent to LED.
18. Hire a staff person to assist the bicycle and pedestrian board to increase infrastructure and signage for bicycling to make the biking community's presence known and supported (such as what is currently present on Willowdale), and to finish the implementation of shared use paths that are already funded and fully planned. This person could also propose further programs to expand non-GHG producing transport.
19. Install electric vehicle charging ports in parking lots and parking spots.
20. Require new large buildings to offer facilities for fostering low-carbon transportation options (walking, biking, transit, car-sharing, etc.)
21. Provide preferred parking for electric vehicles, ride sharing vehicles, and compact vehicles, as well as more and better bike-racks, for example with shelters.
22. Work with WVU to expand the hours of operation of the PRT.
23. Find ways to encourage more businesses (such as the Book Exchange next to Kroger's Market on Patteson), WVU, and perhaps other organizations such as churches to emulate the city and install panels as well.

24. Have specialists from WVU evaluate these possibilities of installing wind power structures adjacent to Morgantown for low cost (after initial investment) and GHG-free electric power, and investigate possible private-sector investments in such projects, especially as coal supplies decline in the region.
25. Provide incentives for existing commercial entities to meet minimum energy consumption and suggest methods to achieve this (ICLEI members can provide many ideas for this).
26. Require any new construction to meet minimal standards for solar capacity and energy consumption or a minimum LEED rating.

Additional Benefits from Greenhouse Gas Reductions

Reducing greenhouse gas emissions provides non-market benefits from avoided costs associated with climate change. While many assumptions can affect estimates of benefits, US-EPA's Interagency Working Group (2016) has monetized these for regulatory cost-benefit purposes. They have determined that avoided emissions provides a benefit of $36-50 per ton. The actual benefit depends on the assumed discount rate and the year of emissions, and increase in succeeding years. While this would not show up in the City budget, benefits to the City from compliance with the greenhouse gas reduction commitments have a value exceeding $100,000 per year.

References Cited

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