


2018 Pennsylvania Energy Assessment Draft Results and Climate Action Plan Updates

April 24, 2018




Prepared for the
Climate Change
Advisory Committee
Meeting

Deb Harris (ICF)
Cory Jemison (ICF)

Agenda

- **Introduction**
 - Presenter Introductions
 - Reminder of Overall Project Approach
- **Energy Assessment Report and Climate Action Plan Schedule**
- **Draft Energy Assessment Results**
- **Climate Action Plan Outline Review**
- **Electricity Sector GHG Accounting Approach**
- **Mitigation-Focused Strategies Review**



April 24, 2018 CCAC Meeting

2

Acknowledgement and Disclaimer

Acknowledgment: This material is based upon work supported by the Department of Energy, Office of Energy Efficiency and Renewable Energy (EERE), under the State Energy Program Award Number DE-EE0006994* and by the Environmental Protection Agency Multipurpose Grant AA-96346101.

Disclaimer: This report (results presented here) was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof."

The results and information presented today are draft, and should not be cited, quoted, or distributed. Final publications of the Energy Assessment and Climate Action Plan will be made publically available from the Pennsylvania Department of Environmental Protection.

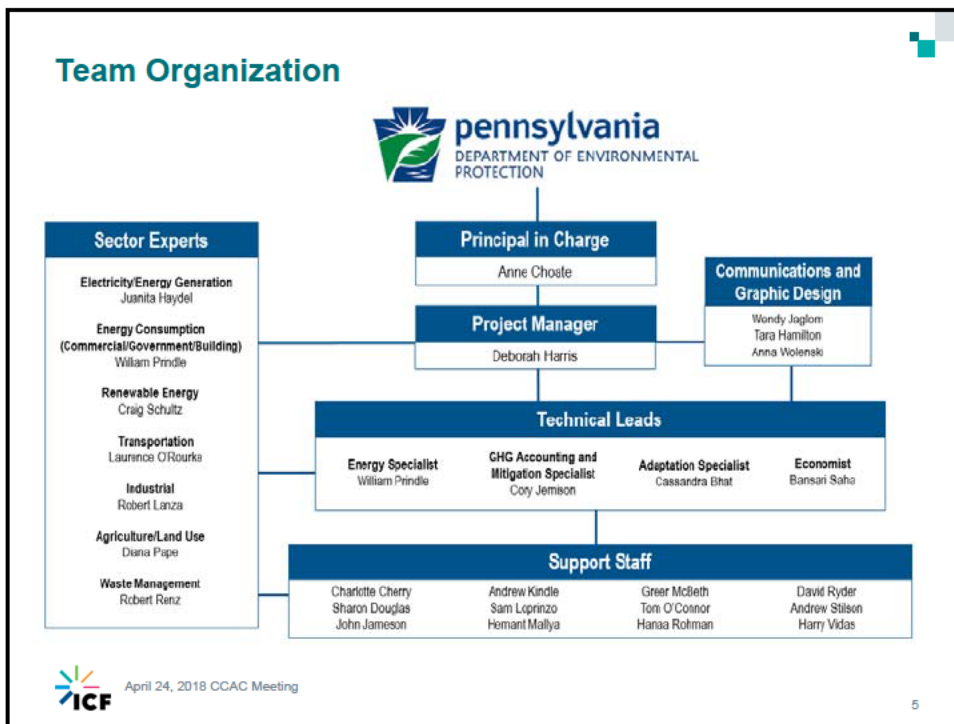


April 24, 2018 CCAC Meeting

Introduction



April 24, 2018 CCAC Meeting



ICF Project Manager and GHG Specialist

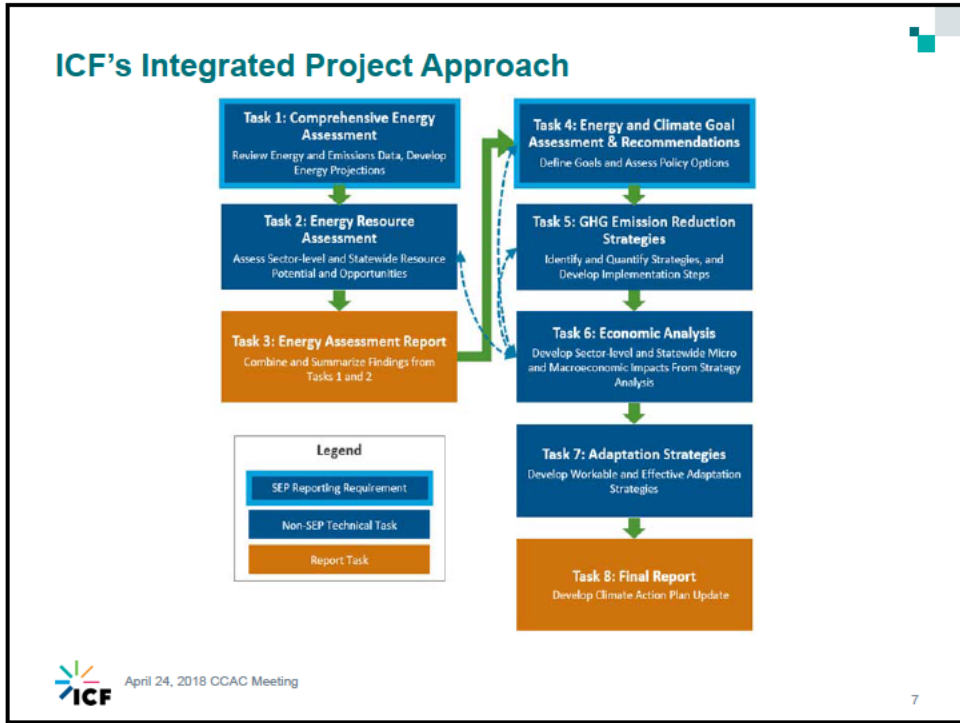
Deb Harris – Project Manager

- 10+ years of experience climate change and energy
- Managed Philadelphia EMP, and numerous other contracts
- GHG inventory and data analysis expert
- Measurement, verification and reporting expert for GHG inventories and mitigation actions

Cory Jemison—GHG Accounting and Mitigation Specialist


- 10+ years of experience in the energy/carbon accounting
- Philadelphia EMP, Kleinman Center, and MWCOG manager/technical specialist
- Works with numerous states, cities, EPA State and Local branch (including State Inventory Tool)

ICF April 24, 2018 CCAC Meeting 6





Energy Assessment Report and Climate Action Plan Schedule

ICF April 24, 2018 CCAC Meeting 8




Draft Energy Assessment Results

 April 24, 2018 CCAC Meeting 9



Draft Energy Assessment Results

- **Objective, Use, and Approach**
- **Findings and Key Conclusions**
- **Feedback from CCAC**
- **Final Steps**

 April 24, 2018 CCAC Meeting 10




Objective, Use, and Approach



April 24, 2018 CCAC Meeting


11



Assessment Objective

Characterize the current, future, and potential energy landscapes in Pennsylvania through two analyses:

- 1. Business as Usual (BAU) Assessment.** Provide a base case assessment of Pennsylvania's energy landscape from 2000 to 2050, given existing policies
- 2. Resource Potential Opportunities Assessment.** Provide an assessment of energy resource potential opportunities that summarizes the technical and economic potential for various energy resource types for 2016 to 2050



April 24, 2018 CCAC Meeting

12

Assessment Use

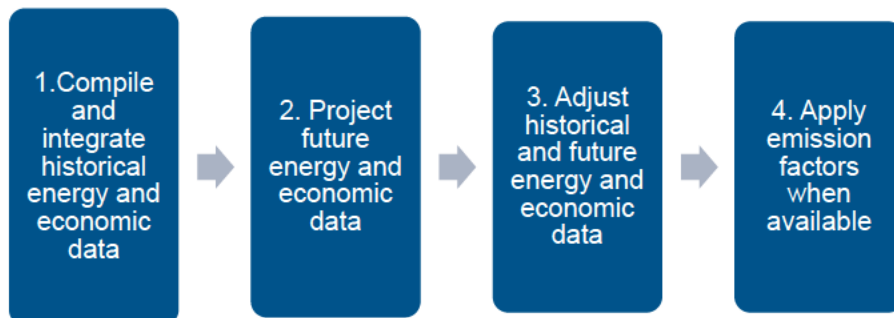
- Objective resource to inform policy makers, the energy industry, interested citizens, and other stakeholders about Pennsylvania's energy trajectory and potential energy opportunities in the Commonwealth
- Identify priority, forward-looking opportunities for future energy policies GHG reductions associated with clean energy policy implementation and changing energy trends
- Serve as the basis for a broader energy strategy for Pennsylvania
- Use to inform the 2018 update of Pennsylvania's Climate Action Plan



April 24, 2018 CCAC Meeting

13

Approach – BAU Assessment



April 24, 2018 CCAC Meeting

14

Approach – Resource Potential Opportunities Assessment

- Use best available data at the time of analysis
- Integrate expert assumptions
- Assess scenarios and projections from various data sources and compare to BAU projections
- Develop a comprehensive analysis about future resource potential in the Commonwealth



April 24, 2018 CCAC Meeting

15

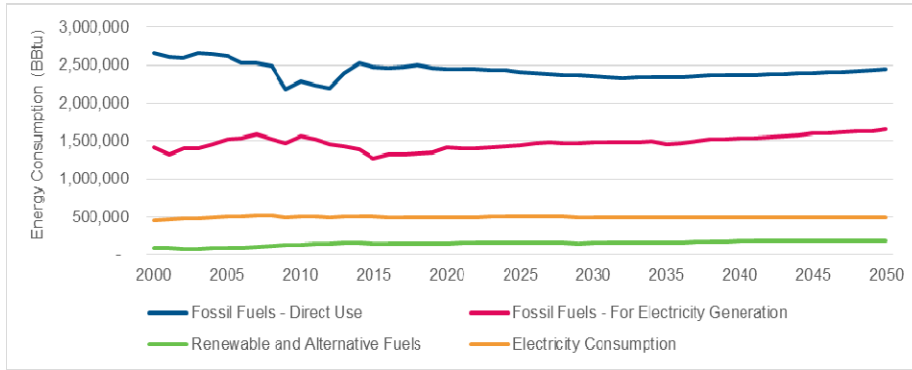
Findings and Key Conclusions



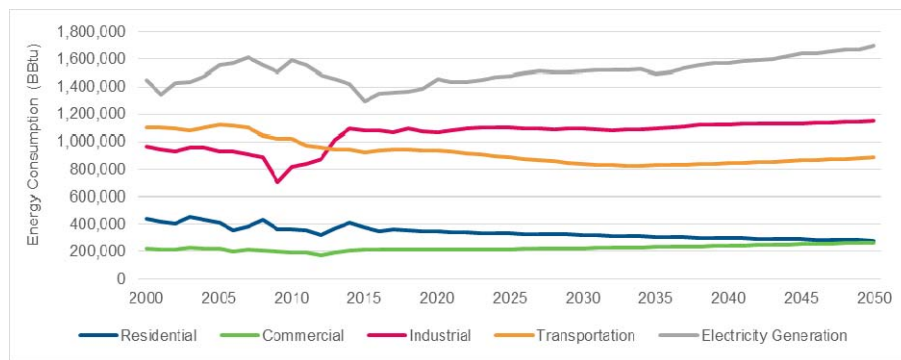
April 24, 2018 CCAC Meeting

16

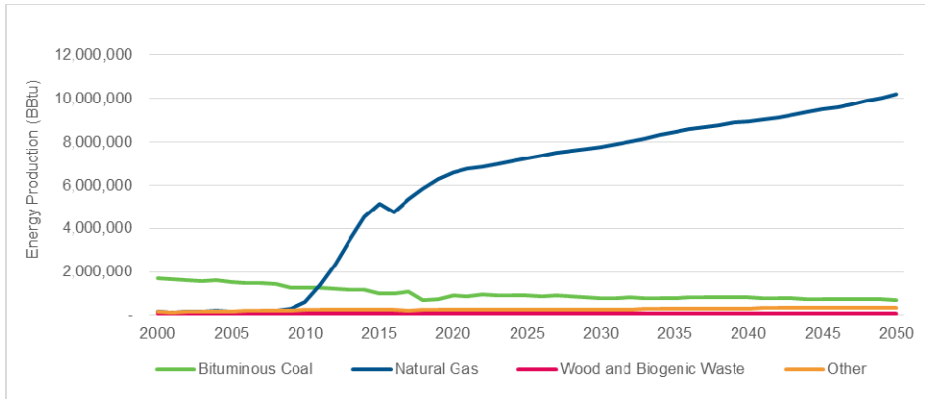
BAU Assessment – Energy Consumption by Fuel Type



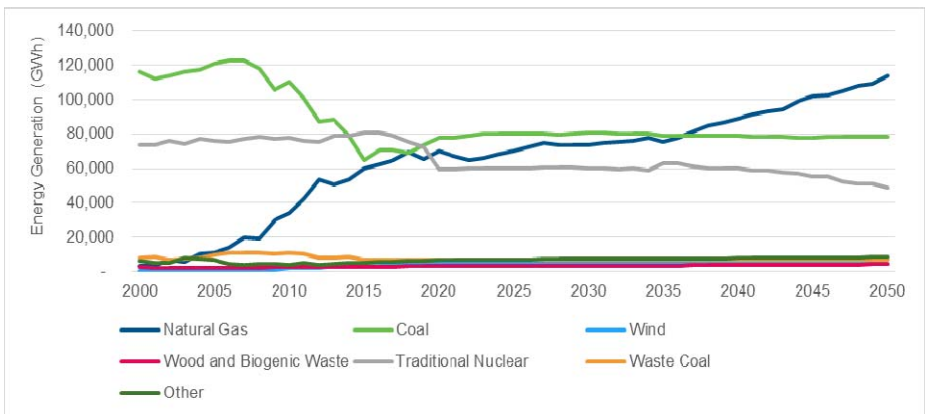
BAU Assessment – Energy Consumption by Sector



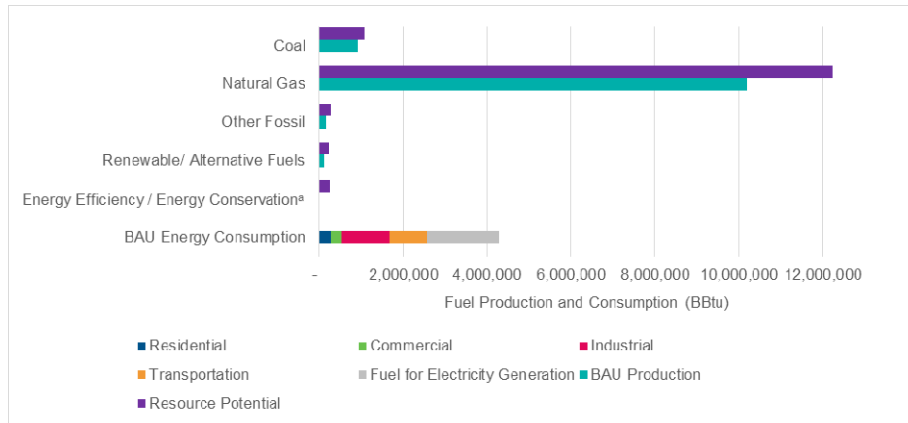
BAU Assessment – Energy Production by Fuel Type



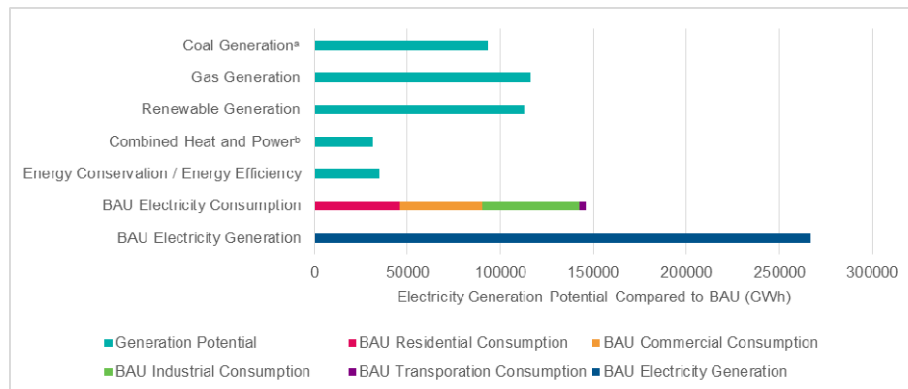
BAU Assessment – Electricity Generation by Fuel Type

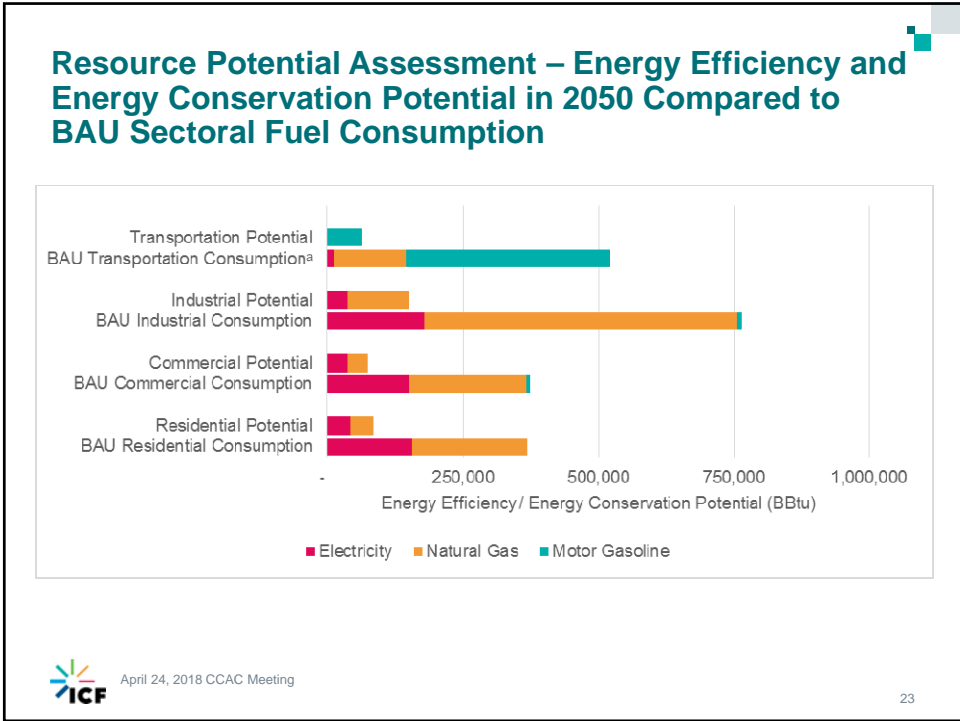


Resource Potential Assessment – Energy Production Economic Potential Compared to BAU Production and Consumption for 2050



Resource Potential Assessment – Economic Potential for Electricity Generation by Fuel Type in 2050 Compared to BAU Electricity Consumption and Generation





- ### Resource Potential Assessment – Enabling Technologies
- Battery Energy Storage
 - CHP/Microgrids
 - Hydrogen Fuel Cells
 - Electrification
 - Internet of Things
- ICF April 24, 2018 CCAC Meeting 24

Key Conclusions from the Energy Assessment

- Pennsylvania has significant and diverse energy resources
- The BAU analysis shows major shifts from coal to gas in power generation, and rising renewable energy production
- Energy consumption increases only modestly, and renewables are supported by policies like the AEPS
- Energy resources are significant on the supply and demand side
- Low emissions sources provide opportunity for Pennsylvania to grow its energy economy while reducing emissions footprint



April 24, 2018 CCAC Meeting


25

Feedback from CCAC on the Energy Assessment




April 24, 2018 CCAC Meeting

26




Final Steps




April 24, 2018 CCAC Meeting

27




Final Steps for Energy Assessment

- Report shared with CCAC one week prior to this meeting
- Discussed verbal feedback from CCAC at this meeting
- CCAC to provide additional written feedback to DEP by April 27
- DEP and ICF to address comments and prepare report for final publication in Spring 2018





April 24, 2018 CCAC Meeting

28




**Climate Action Plan Outline
Review**

 April 24, 2018 CCAC Meeting 29



**Electricity Sector GHG
Accounting Approach**

 April 24, 2018 CCAC Meeting 30




Mitigation-Focused Strategies Review




April 24, 2018 CCAC Meeting

31



Context

- **Strategy** is used to describe a high-level approach that encompasses multiple policy options or actions
- A key component of the 2018 CAP update is to include strategies that have both mitigation and adaptation impacts for the Commonwealth where feasible
- Developing integrated strategies is an iterative process that requires us to first consider strategies that have mitigation impacts and adaptation impacts individually, and then tie them together
- Materials provided for CCAC review have a primary focus on strategies with mitigation impacts, but also include the first iteration of tying in the adaptation impacts
- The CAP will include quantitative and qualitative discussions of strategies – not all policies and actions will be modeled



April 24, 2018 CCAC Meeting

32

Approach

1. Develop framework for compiling mitigation-focused strategies in line with CAP outline (refer to document Table 1)
2. Compile list of strategies to consider from:
 - a. Previous PA Climate Action Plans
 - b. Suggestions from DEP
 - c. Strategies with adaptation benefits draft list
 - d. Suggestions from the CCAC
 - e. List of what other jurisdictions are doing (based on Plan reviews conducted in 2017)
 - f. Objective reviews of the Pennsylvania GHG Inventory and Energy Assessment
3. Map strategies into the framework
4. Map mitigation strategies that intersect with adaptation strategies



April 24, 2018 CCAC Meeting

33

Initial Selection Criteria for Strategies to Consider

- Addresses substantially large energy use or production and/or GHG emissions in Pennsylvania
- Overlaps with one or more adaptation strategies previously identified
- Covers existing programs and actions Pennsylvania is currently invested in
- Was highlighted as important by either/both DEP and the CCAC prior to the April 2018 CCAC meeting



April 24, 2018 CCAC Meeting

34

Discussion Questions

- Are there strategies and policy options that you would suggest adding or removing from the initial list, indicating that they should or should not be included in the CAP?
- Which strategies and policy options would you prioritize as most important for modeling and focus in the CAP?

All strategies identified could be relevant for Pennsylvania, but ICF will require DEP and CCAC feedback to refine the list of what should be included in the CAP. In coming up with this final list we should be focusing on options that have a higher likelihood of implementation.



April 24, 2018 CCAC Meeting

35

Strategy Development Process and Next Steps

1. ICF and DEP to develop initial list of mitigation-focused strategies for consideration – April 2018
2. Share draft mitigation-focused strategy list with CCAC – One week Prior to April CCAC meeting
3. Present mitigation-focused strategy list and have discussion with CCAC at meeting – April 24, 2018
4. Receive additional CCAC feedback on mitigation-focused strategy list – April 27, 2018
5. Finalize draft adaptation-focused strategies list – April 2018
6. Finalize draft strategy list, addressing both mitigation and adaptation – May 2018
7. Share draft final strategy list with CCAC for final feedback – May 2018



April 24, 2018 CCAC Meeting

36

Thank You

Deb Harris, Senior Manager
Deborah.Harris@icf.com, (202) 862-1574

Cory Jemison, Manager
Cory.Jemison@icf.com, (202) 862-1215

