Pennsylvania Climate Action Plan Update, Including Technical and Economic Analysis

ICF Introduction and Approach Overview

August 7, 2017

Prepared for the Climate Change Advisory Committee Meeting

Deb Harris (ICF)
Bansari Saha (ICF)

Agenda

Introduction to the ICF Team

Overview of Our Approach

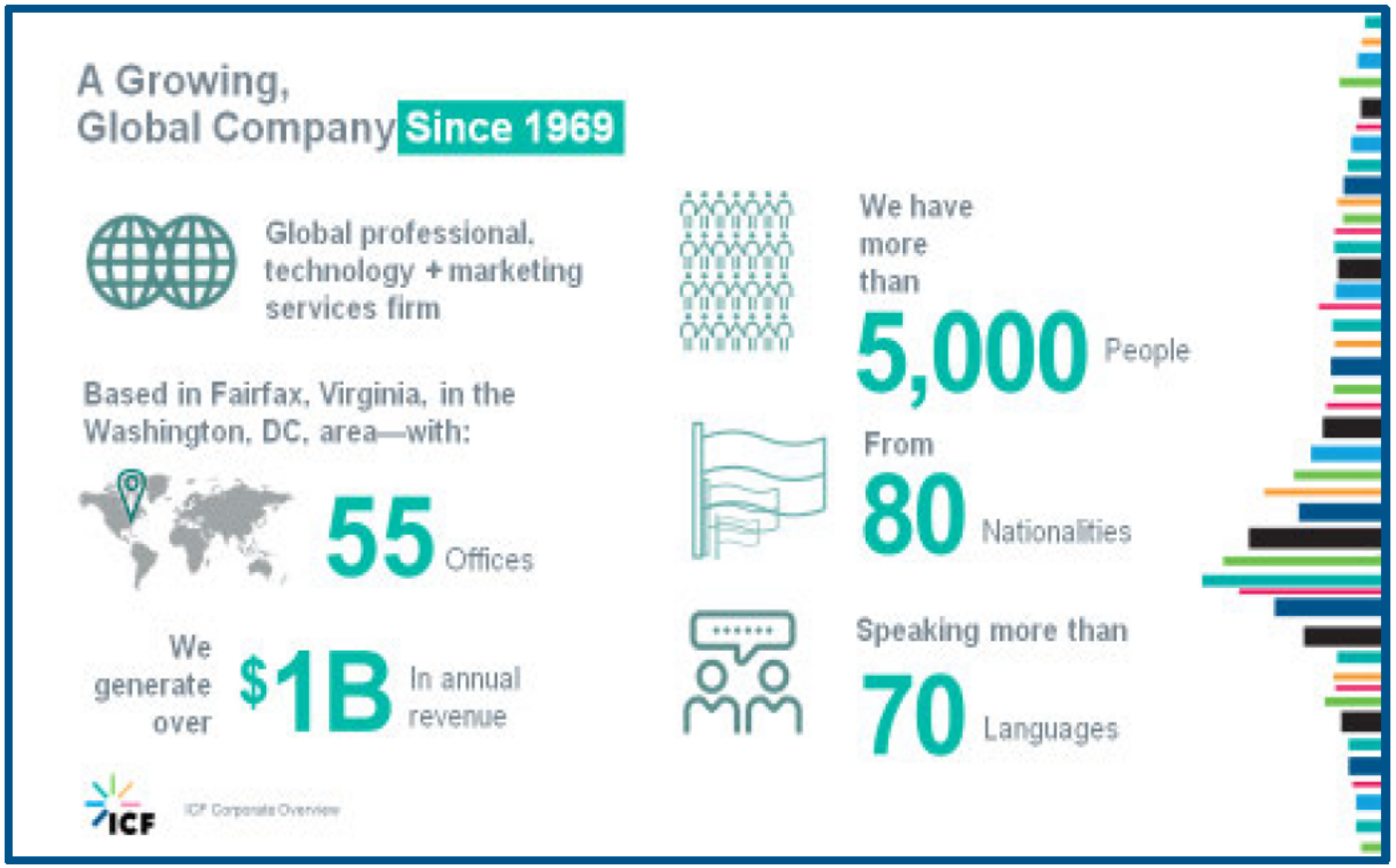
- Overall Project
- Task by Task

Key Questions and Areas of Input from the CCAC

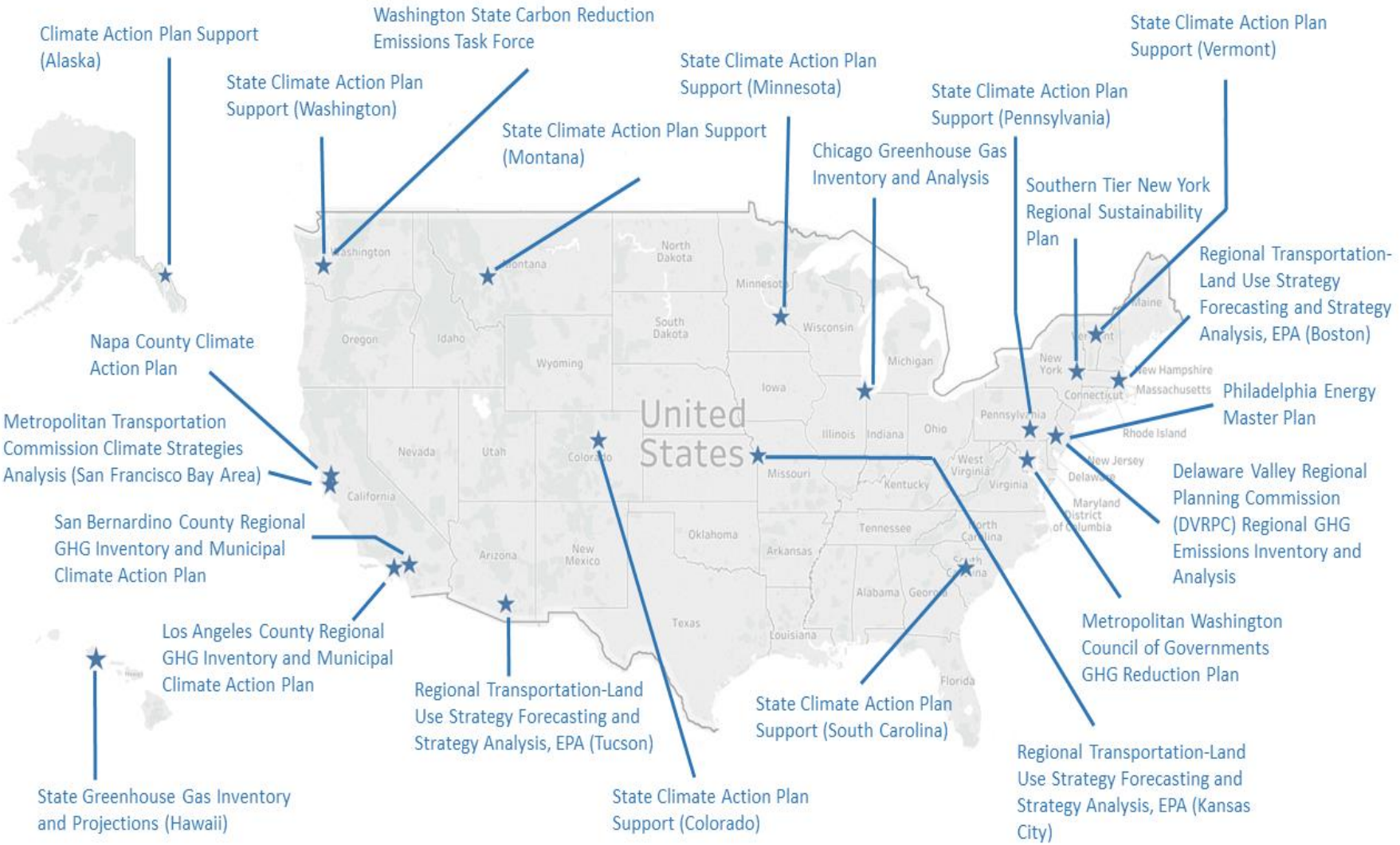
Next Steps

Introduction to the ICF Team

Meet ICF

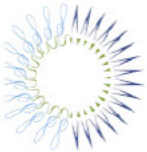


ICF's State and Regional Climate and CAP Work



ICF's Climate Resilience and Adaptation, and Energy and Economic Modeling Experience

Climate Resilience and Adaptation



THE PEW CHARITABLE TRUSTS

City of Philadelphia

CLIMATE CENTRAL

Energy and Economic Modeling

RGGI Inc.

NRDC

MGA
Midwestern Governors Association

ENERGY FOUNDATION
building a new energy future

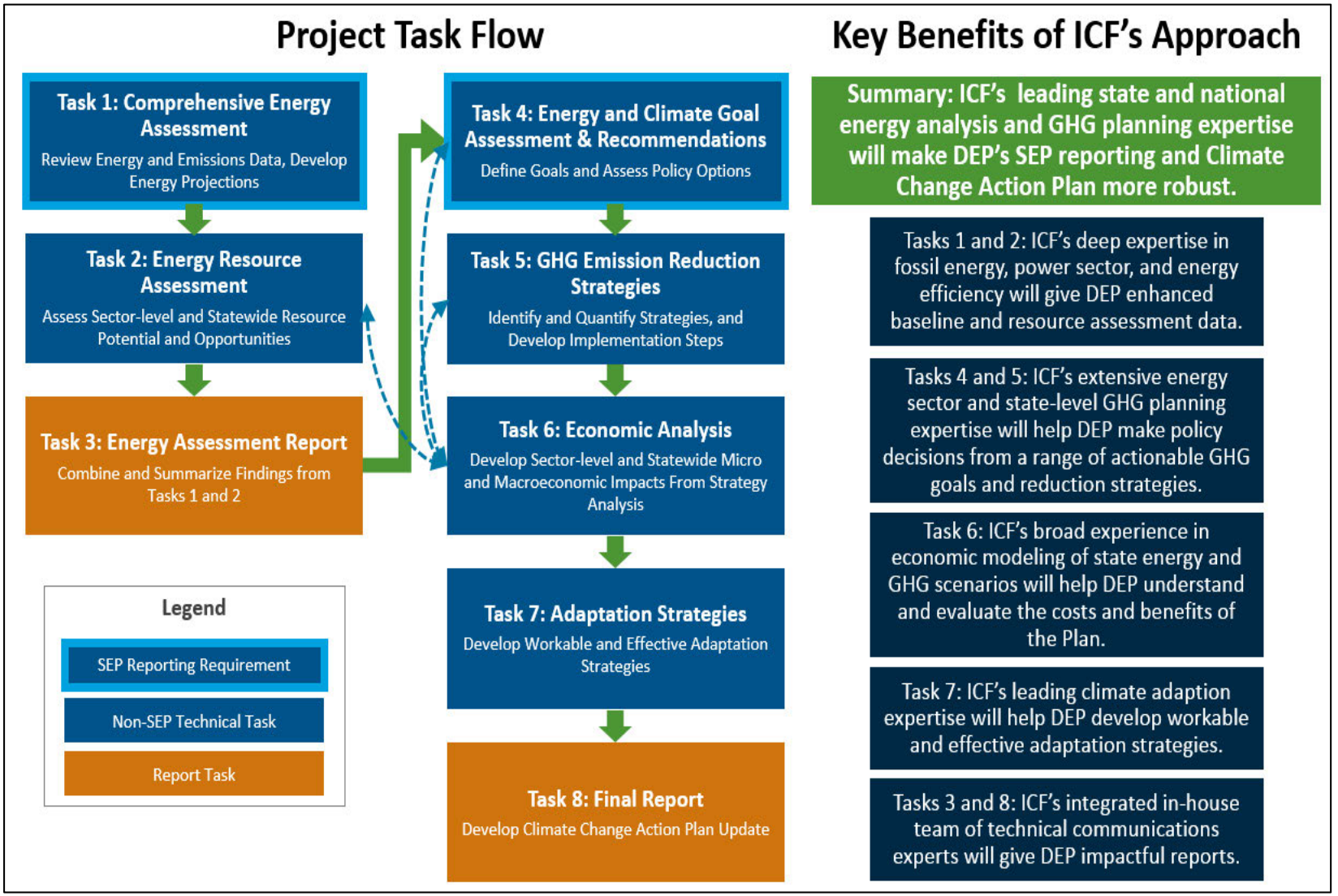
KLEINMAN CENTER for ENERGY POLICY

Overview of Our Approach

Tasks

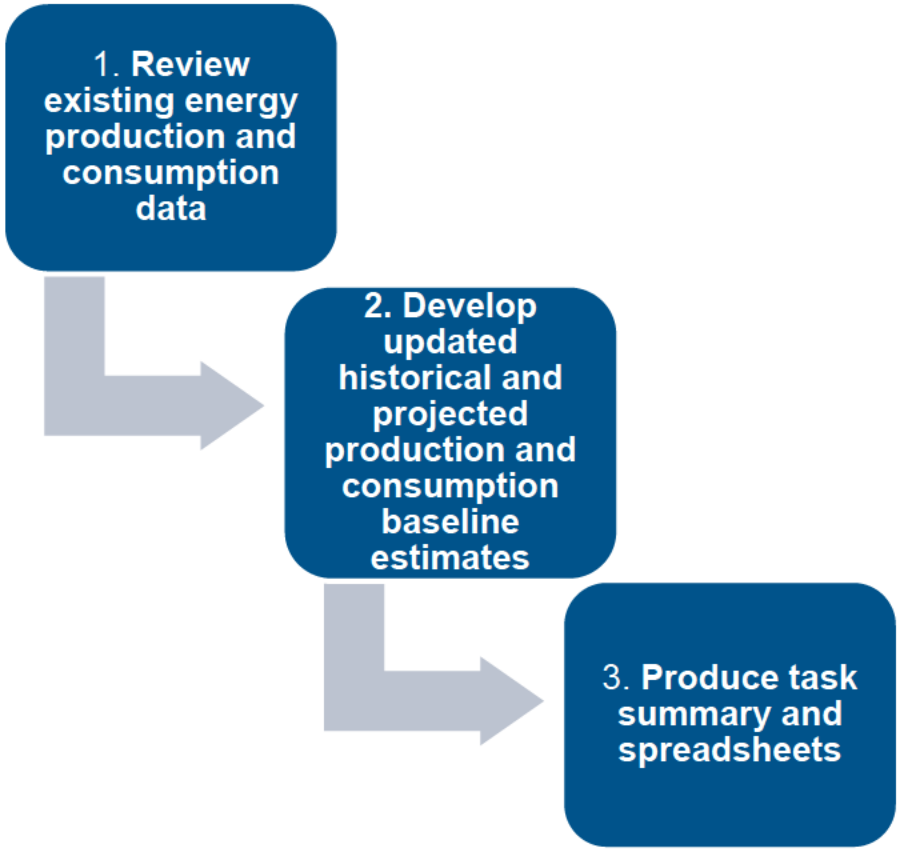
- **Integrated Task Approach**
- **Task 1. Comprehensive Energy Assessment**
- **Task 2. Energy Resource Assessment**
- **Task 3. Energy Assessment Report**
- **Task 4. Energy and Climate Goal Assessment and Recommendation**
- **Task 5. GHG Emission Reduction Strategies**
- **Task 6. Economic Analysis**
- **Task 7. Adaptation Strategies**
- **Task 8. Final Report**

ICF's Integrated Project Approach



Task 1. Comprehensive Energy Analysis Requirements

Task Steps



Key Task Components

- Use existing state and federal data sources (State Inventory Tool, EIA, USDA, BLM, NREL, etc.)
- Covers energy production and consumption, including transportation

Task 2. Energy Resource Assessment

1. **Develop supplemental resource assessments**
   - Include energy efficiency, fossil fuels, electricity generation, transportation, and DER
2. **Define sectoral energy resource opportunities**
   - Map the resource potential data into sectoral strategies for sectors
   - Produce estimates in the form of energy supply and/or efficiency potential by sector
3. **Develop environmental impact and economic benefit and cost estimates.**
   - Project environmental and economic benefits
4. **Produce task summary and spreadsheet(s)**

Energy Resource Type	Sector					
	Transpor-tation	Electricity Generation	Industrial	Commercial Buildings	Government Buildings	Residential Buildings
Energy Efficiency	X		X	X	X	X
Coal		X	X			
Petroleum	X					
Natural Gas	X	X	X	X	X	X
Propane				X		X
Biofuels (direct use)	X		X	X	X	X
Renewable Power (wind, solar, biofuels, hydro)		X	X	X	X	X

Task 3. Energy Assessment Report

1. Establish Understanding

- Prepare a brief, including an outline for this report
- Summarize audience, objectives, and key messages, and
- Include a high-level outline for the report

2. Template and Style Guide

- Prepare template with sample graphs, tables, equations, and textboxes
- Promote a consistent voice across all task reports,
- Provide specific style conventions to promote consistent style and editing

3. Draft and Compile Content

- Leverage the content developed for Tasks 1 and 2
- Add context, framing, and transitions
- Develop an executive summary
- Edit the text for compliance with the style guide

Task 4. Energy and Climate Goal Assessments and Recommendation Requirements

Task Steps

1. Review national and regional GHG emission reduction goals
2. Recommend PA GHG emission reduction goals
3. Review clean energy policy options to meet those goals
4. Assess environmental and economic benefits and costs
5. Develop task report and spreadsheets

Clean Energy Category*	Sector					
	Transpor-tation	Electricity Generation	Industrial	Commercial Buildings	Government Buildings	Residential Buildings
Electricity Generation	X	X				
Natural Gas	X	X	X	X	X	X
Energy efficiency	X		X	X	X	X
Transportation	X	X				

*GHG reduction strategies for the land use, forestry, agriculture, and waste management sectors will be addressed in Task 5.

Task 5. GHG Emission Reduction Strategy Requirements

Task Steps

1. Integrate energy-sector GHG projections with GHG inventory projections for all sectors
2. Identify GHG reduction strategies
3. Develop GHG reduction calculation framework
4. Assess environmental benefits and economic benefits and costs
5. Develop implementation steps
6. Summarize findings, including projections, frameworks documentation and memo

Task 6A. Microeconomic Analysis (Sector Specific and Bottom Up)

1. Estimate Sector-Specific Impacts of GHG Reduction Strategies

- Used in the macroeconomic analysis

2. Estimate Impacts on Energy Prices, Energy Production and Consumption

- Analyze strategies and estimate changes to energy consumption and production and estimate how these changes will impact energy prices
- Use sensitivity analyses where possible
- Use estimates of the effect of LBD

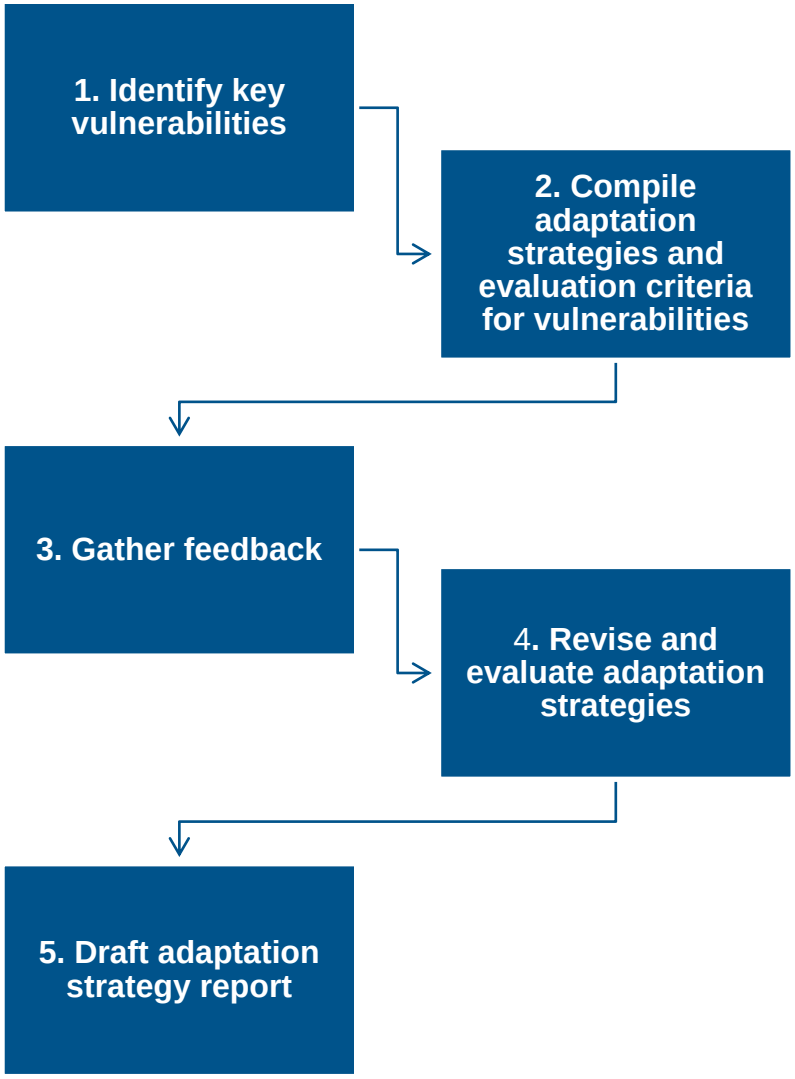
3. Refine Microeconomic Analysis Based on DEP Inputs

- Updates and refinements made to the goals and reduction strategies and their associated costs, benefits and co-benefits estimates in prior tasks will necessitate updates

Task 6B. Macro-Economic Modeling (top-down) of the Climate Change Action Plan

- **Model Choice – REMI Policy Insight Plus (PI+), v2.1**
  - Need to determine specific configuration
- **Calibrate REMI Reference Case**
  - Recalibrate the Reference Case in REMI to appropriately reflect the business-as-usual projections for the PA economy
  - Adjust the variables in REMI to ensure consistency with the expected BAU scenario taking into account any additional differences between the REMI Reference Case and the baseline developed in Tasks 1 and 5
- **Estimate Macroeconomic Impacts for GHG Reduction Strategies**
  - Use metrics provided from the microeconomic analysis component of Task 6
  - Metrics will consist of changes to final demand, price impacts, and monetized benefits and co-benefits.
  - Additional value of benefits and co-benefits can be accounted for using the “amenity variable” in REMI

Task 7. Adaptation Strategy Requirements



Potential Key Vulnerabilities

- Sea level rise
- More frequent, extreme weather events
- Increased potential flooding
- Increased human health risks
- Changing pest, weed, and disease management
- Increased demand for energy
- Increased demand for outdoor recreation
- Wetland drying
- Degraded water quality

Task 8. Final Report

1. Develop Creative Brief

- Identifies the target audience(s), objectives, key messages, outline, and look and feel (e.g., colors, fonts, graphic elements) for the reports

2. Develop Template

- Leverage out graphic design team to develop a visually appealing, public-facing template using Microsoft Word

3. Draft Content

- Leverage the content developed for Tasks 4-7 in developing the content for the 2018 Update report

4. Prepare Draft and Final Document

- Conduct thorough QA/QC of the documents, and deliver the final report in Word and accessible PDF files

Key Questions and Areas of Input from the CCAC

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- **CAP Process – Initial Questions and Steps:**
  - **Scope of emissions covered**
  - **Baseline year and future years**
    - Near term versus long term definitions
  - **Reductions measures considered**
    - Largest impact in terms of GHG emissions
    - Direct action/player versus influencer
- **High interest areas and sectors**
  - Does the group agree on this list?
    - Goals and recommendations for achieving goals
    - Adaptation
    - Transportation
    - Building EE
  - **Addressing the lack of federal climate policy**
    - Clean Power Plan
    - Pull out of Paris

Key Questions and Areas of Input from the CCAC

- **Existing relevant, helpful materials**
  - We will be updating, where should we pull from?
- **Micro analysis**
  - What data can be provided?
- **Macro REMI**
  - What is the preference for modeling resolution?
- **Report and Material Audiences**
  - Who will use the Energy Assessment report and interim materials feeding the CAP update?
- **Other?**

Next Steps

Next Steps

- ✓**Develop detailed project work plan and schedule**
  - ✓Take into account key dates DEP needs to adhere to
  - ✓Provide detailed list of all materials and deliverables ICF will provide and schedules for development and review
  - ✓Clarify/confirm metrics and outputs of ICF analyses that will be developed
- ✓**Collect and review available data and analyses**
- ✓**Establish management structures with DEP (regular check ins, etc.)**

Thank You

Deb Harris, Senior Manager

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

Bansari Saha, Senior Manager

Bansari.Saha@icf.com, (617)-250-4286