



## Presentation to USDA Agricultural Air Quality Task Force

### USDA Climate Change Update

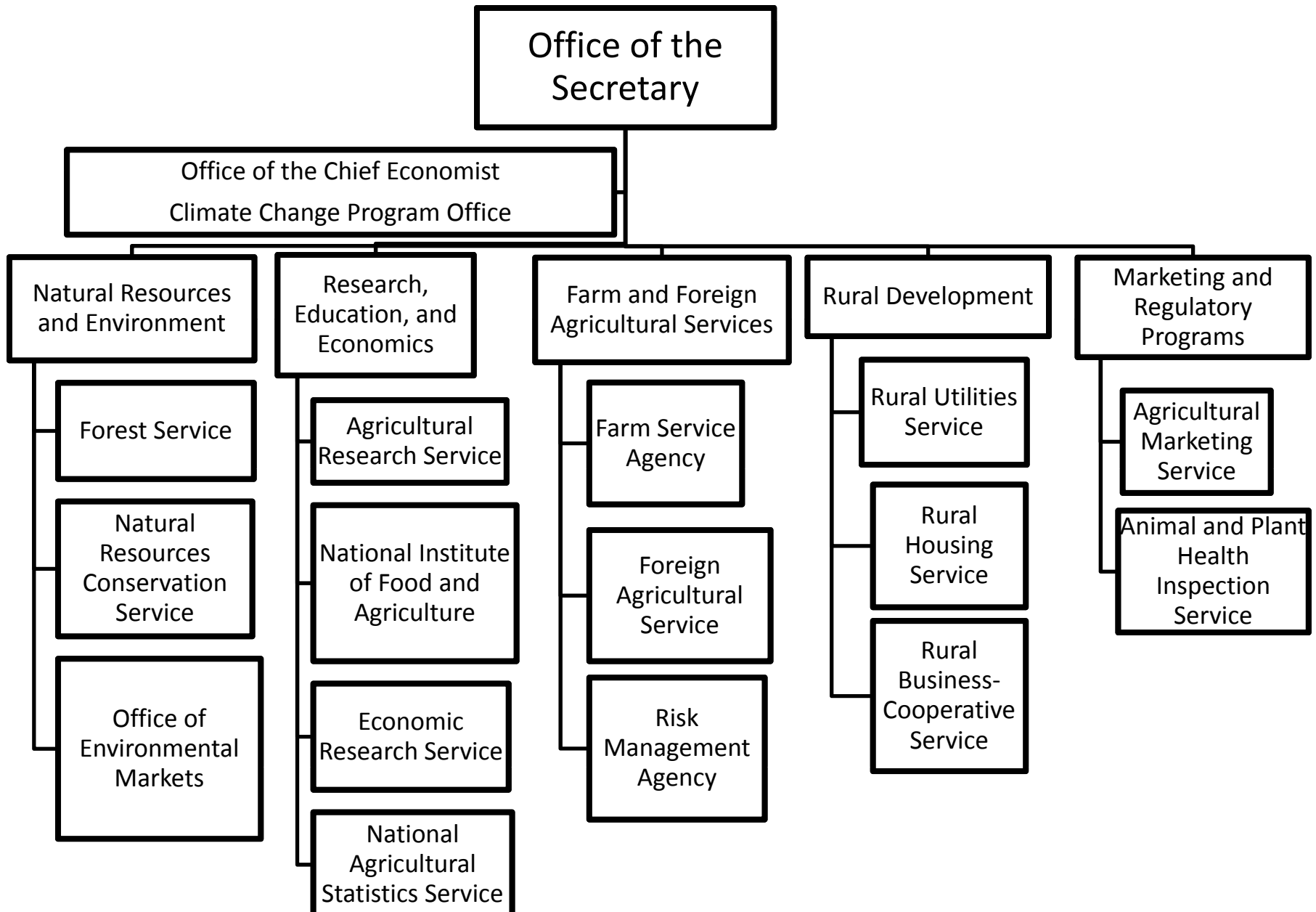


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September, 2010

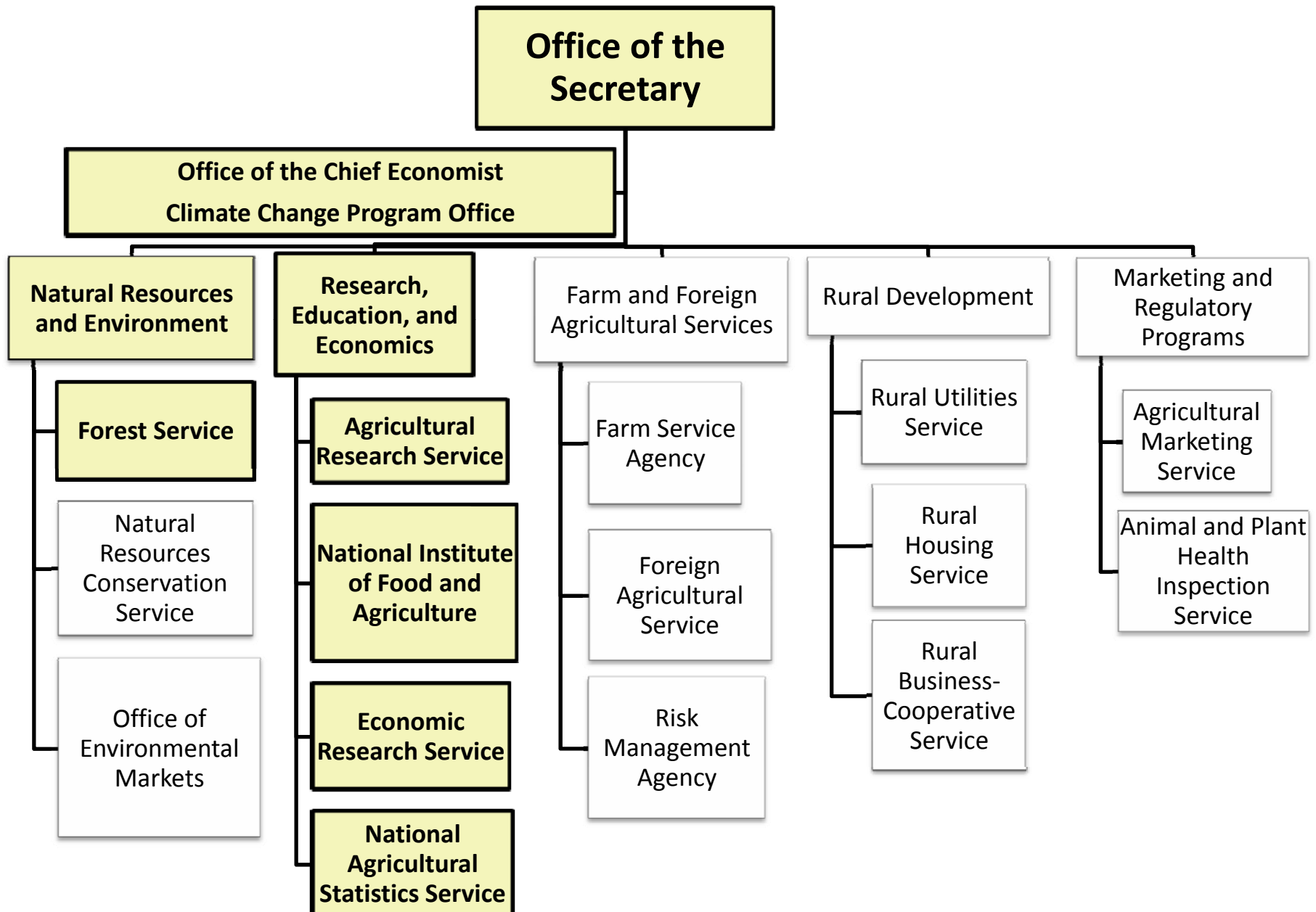
# Items to discuss

- USDA Strategic Plan and Agency Activities
- Development of new “Scientific Methods and Technical Guidelines for GHG from Agriculture and Forestry”
- EPA Call for Information: Information on Greenhouse Gas Emissions Associated with Bioenergy and Other Biogenic Sources

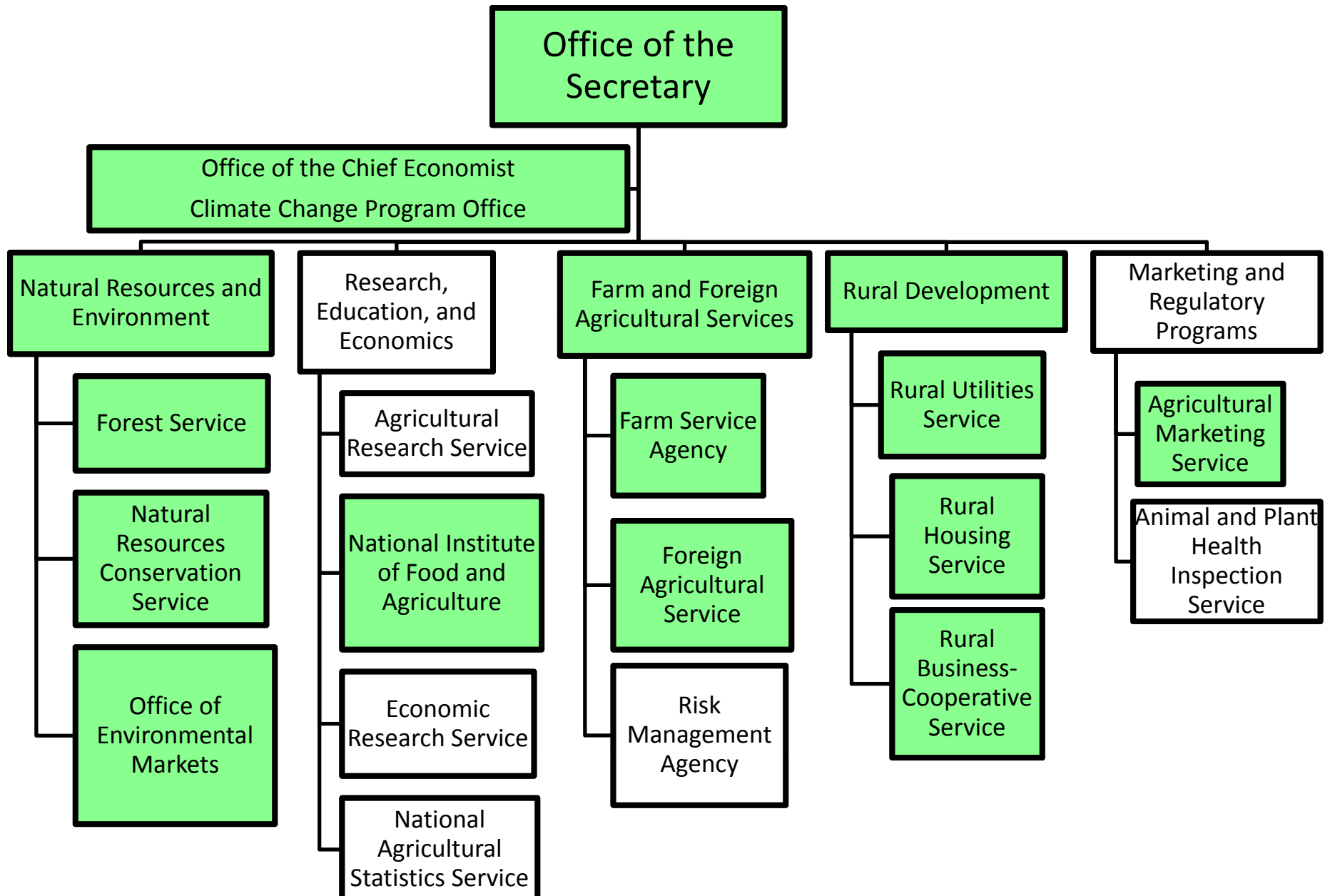
# USDA Climate Change Organization Overview



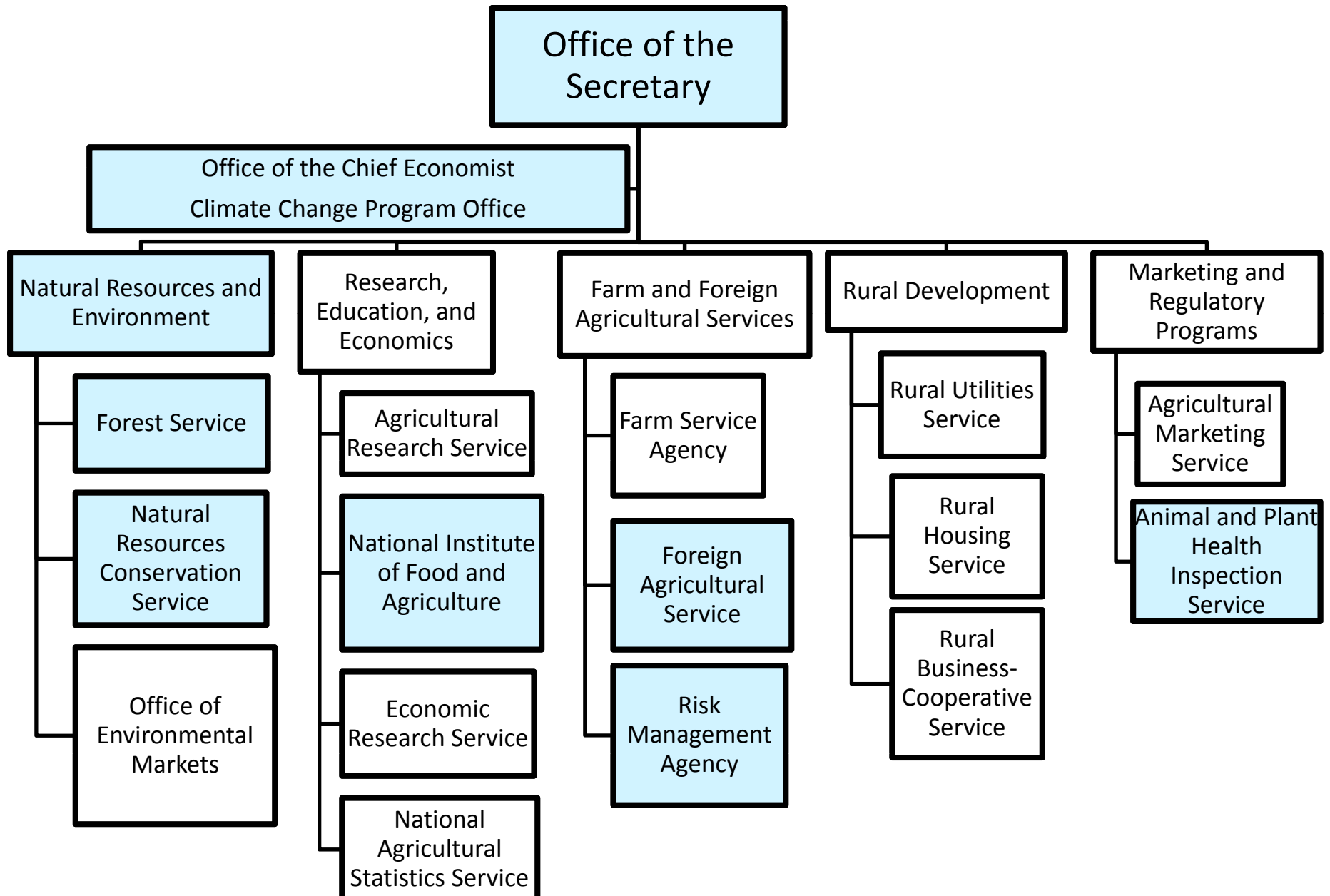
# USDA Climate Change Organization Research



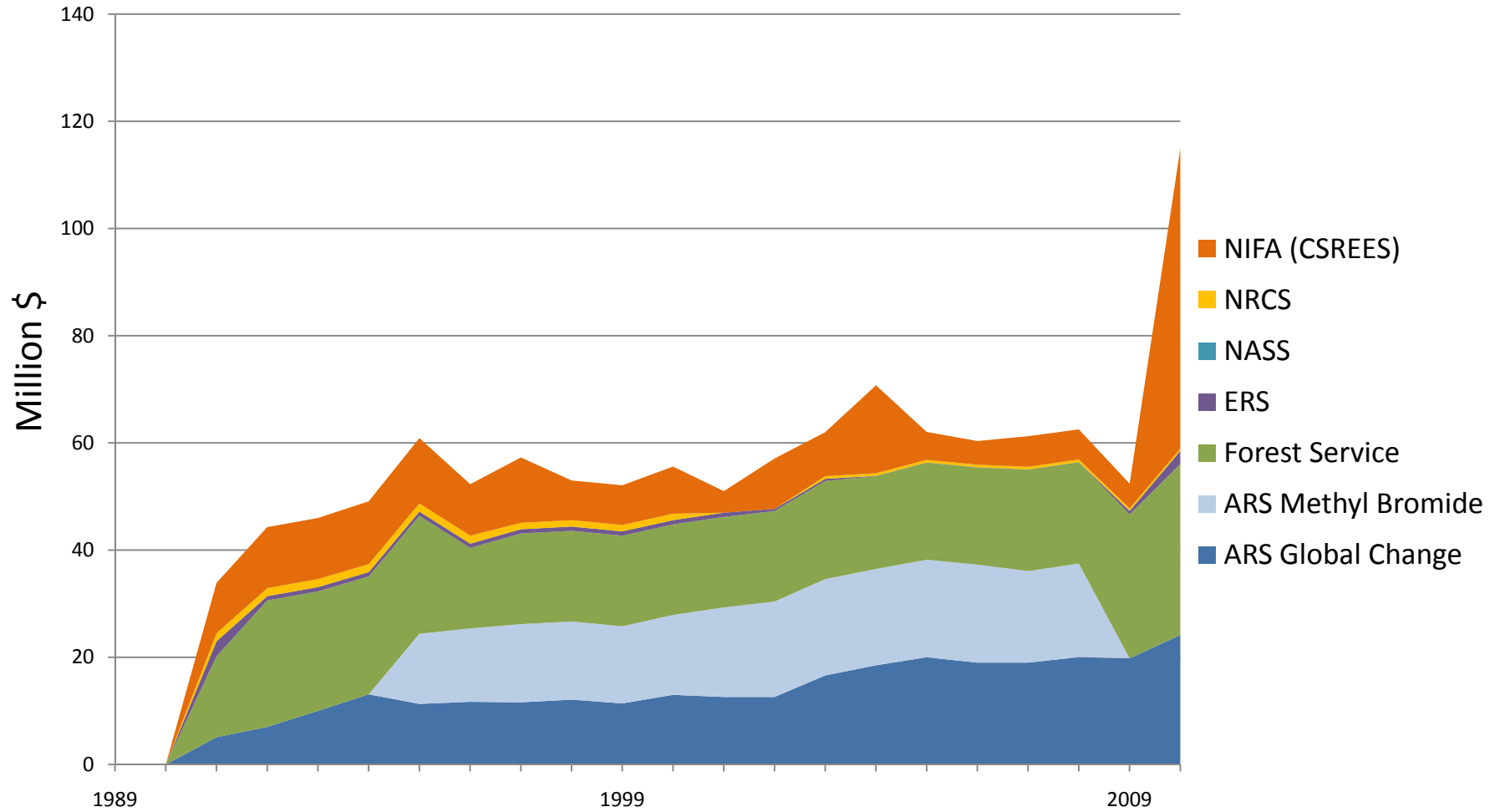
# USDA Climate Change Organization Mitigation



# USDA Climate Change Organization Adaptation



# USDA Global Change Research Program Budget



# USDA 2010-2015 Strategic Plan

- Strategic Goal #1: Improve Rural Economies
  - Pillar 4: **Capitalize on Opportunities Presented by the Nation's Efforts to Develop Markets for Ecosystem Services and Mitigate Climate Change**
- Strategic Goal #2: **Ensure Our National Forests and Private Working Lands Are Conserved, Restored, and Made More Resilient to Climate Change, While Enhancing Our Water Resources**
  - Objective 2.1 – Restore and Conserve the Nation's Forests, Farms, and Grasslands
  - Objective 2.2 – Lead Efforts to Mitigate and Adapt to Climate Change
  - Objective 2.3 – Protect and Enhance America's Water Resources
  - Objective 2.4 – Reduce Risk from Catastrophic Wildfire and Restore Fire to its Appropriate Place on the Landscape



# USDA Agency Activities

- ARS – Impacts of changing climate on production, grazing, invasive species, weed distribution, plant-soil transfer processes;
- ERS – What are the market effects of climate change and adaptation in the agricultural sector? How will farmers' responses to climate change affect production practices, economic returns, resource use, and environmental outcomes?;
- FS – Building resistance to climate stressors, facilitating transitions, monitoring;
- NRCS – Snow survey program, drought monitor, rapid carbon assessment, Nitrogen Trading Tool;
- NIFA – Multiple Agricultural and Food Research Initiatives on processes, management effects, soil preservation, water, and air resources to support ecosystems and biodiversity, along with sustainable agricultural production;

Development of new  
“Scientific Methods and Technical Guidelines for GHG  
from Agriculture and Forestry”

# New USDA Guidelines for Entity/Project GHG Reporting

The guidelines will result in a method for an integrated inventory at the farm/landowner scale for all agricultural and forest management activities:

- Cropland Soils
- Agroforestry
- Enteric fermentation
- Field residue burning
- Rice production
- Grazing land management
- Fertilizer management
- Forest management
- Manure management
- Lime applications
- Wetland soils



# The Guidelines and Methods will:

- Build upon the 1605(b) guidelines, providing a simpler, more robust reporting tool.
- Integrate use of existing modeling tools (such as COMET-VR, COLE, FVS, etc.) as much as possible in order to maximize data and reporting consistency and transparency.
- Be scalable for use in local and regional estimation, and consistent with national inventory efforts.
- Be multi-purpose to facilitate use by:
  - Private landowners
  - Public and private GHG registries
  - USDA for assessing the effectiveness of conservation programs
  - Policy-makers in debating/implementing possible legislative options
- Pass full expert peer and public reviews.
- Provide reliable, real and verifiable estimates of on-site GHG emissions and C storage.

The project is planned for completion within the next three years.



# KEY CONSIDERATIONS

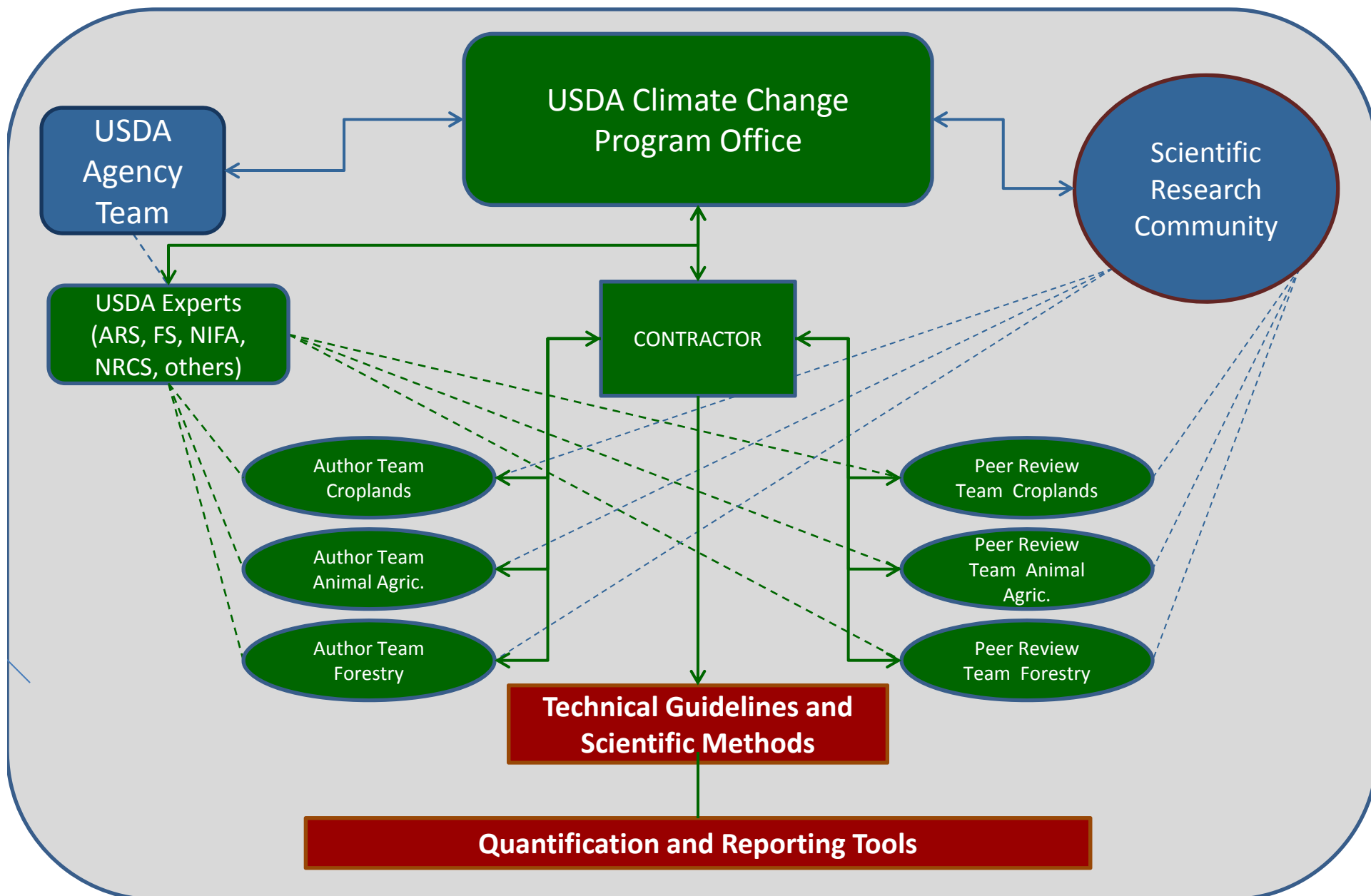
1. How to improve accuracy while also enhancing ease of use?
2. How to make the Guidelines most broadly useful to a diverse set of Agencies and stakeholders?
3. How to quantify GHGs for the whole operation – are there “minor activities” or does the estimate need to capture ALL activities within the entity?
4. Should the guidelines specify ONE method for any given activity, or allow users a menu of methods requiring differing levels of input detail?
5. How to balance scientific rigor while maintaining broad applicability, national consistency and user friendliness?
6. What models or tools currently exist for farm- or entity-scale GHG inventory and reporting and how might they be useful to this project?
7. What considerations in the Guidelines could specifically lead to lower cost of verification or validation of offsets under a crediting system?



# KEY CRITERIA

1. **Transparency** – Assumptions and methodologies clearly explained to facilitate replication.
2. **Consistency** – The methods and estimates should be internally consistent with other years and, to the extent possible, with other USDA inventory efforts.
3. **Comparability** – Requires that the estimates of emissions and sequestration reported by one entity be comparable to the estimates being reported by others.
4. **Completeness** – An inventory must account for all sources and sinks, as well as all greenhouse gases to the greatest extent possible.
5. **Accuracy** – Estimates should be accurate in that they are systematically neither over nor under true emissions or removals as far as can be judged.
6. **Cost effectiveness** – Balance between the relative costs and benefits of additional efforts to improve the inventory or reduce uncertainty.
7. **Ease of use** – The level of complexity of the user interface and underlying data requirements.

# USDA GHG Guidelines Development



# PROJECT TIMELINE



FY10

- ❖ Project work plan and scope
- ❖ RFP Development and contractor selection
- ❖ Initial review of existing methods

FY2011

- ❖ Author Selection and Instructions
- ❖ Solicit initial views from public
- ❖ Guidelines 1<sup>st</sup> Draft
- ❖ USDA Review
- ❖ Technical Peer Review

FY2012

- ❖ Completion of 2<sup>nd</sup> Draft
- ❖ Development of Tool and Interface 1<sup>st</sup> Draft
- ❖ USDA Tool Review
- ❖ Completion of 3<sup>rd</sup> Draft Guidelines and 2<sup>nd</sup> Draft Tool

FY2013

- ❖ Tool Beta Testing
- ❖ Guidelines Public Comment
- ❖ Tool Public Comment
- ❖ Final Guidelines Published
- ❖ Final Tool and Documentation Published



EPA Call for Information: Information on  
Greenhouse Gas Emissions Associated with  
Bioenergy and Other Biogenic Sources

# Treatment of biogenic sources of CO<sub>2</sub> under the CAA

- *Mandatory GHG Reporting Rule.* --excluded biogenic CO<sub>2</sub> from threshold analysis.
- Endangerment Finding -- excluded the CO<sub>2</sub> emissions from the combustion of ethanol and biodiesel from analysis stating that “Carbon dioxide is emitted from motor vehicles and motor vehicle engines during the fossil fuel combustion process.”
- Tailoring Rule -- EPA does not treat bioenergy and biogenic CO<sub>2</sub> emissions differently from fossil fuel CO<sub>2</sub> emissions. “legal rationale[s]... does not provide sufficient basis to exclude emissions of CO<sub>2</sub> from bioenergy and biogenic sources in determining permitting applicability provisions at this time.”
- Call for Information -- EPA requested technical information to assist the U.S. Government in developing policies that account for emissions from biological sources in regulations and/or guidance that will address the mitigation of GHG emissions.

# Call for Information

- What criteria might be used to consider biomass fuels and the emissions?
- To what extent does this approach suggest that biomass consumption for energy is “neutral” with respect to net fluxes of CO<sub>2</sub>?
- To what extent is the accounting procedure in the IPCC Guidelines applicable or sufficient for process, unit, or facility specific assessments?
- What alternative approaches or additional analytical tools are available for determining the net impact on the atmosphere of CO<sub>2</sub> emissions associated with bioenergy?

# Call for Information (continued)

- What bases or metrics are appropriate for comparing biogenic emissions with emissions from fossil fuels?
- What bases or metrics are appropriate for such a comparison among sources? In other words, are all biological feedstocks (e.g. corn stover, logging residues, whole trees) the same, and how do we know?
- Other biogenic sources of CO<sub>2</sub> such as landfills, manure management, wastewater treatment, livestock respiration, fermentation processes in ethanol production, and combustion of biogas not resulting in energy production (e.g., flaring) may be covered under certain provisions of the CAA....
- How should these “other” biogenic CO<sub>2</sub> emission sources be considered and quantified?

# Considerations

- At issue: accounting for the sequestration of carbon in biomass.
- To date, all efforts have followed the widely accepted guidance of the IPCC and UNFCCC for national greenhouse gas inventories.
- Options for addressing biogenic carbon:
  - Neutrality
  - Lifecycle analysis
    - Cross-sectional analysis
    - Single stand over time (Manomet)
    - Boundaries
    - Reasons for including or excluding indirect international effects
  - No different from other sources
    - Implications for use of biomass energy as a mitigation strategy
    - Treatment of decomposition and respiration emissions