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**TOWARD AN
INTEGRATED U.S. GREENHOUSE GAS
MEASUREMENT AND MONITORING
INFORMATION SYSTEM**

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Outline

- Policy-related motivations
- Desired monitoring system characteristics
- Interagency Working Group
- Draft Federal Strategy
- Concluding Remarks



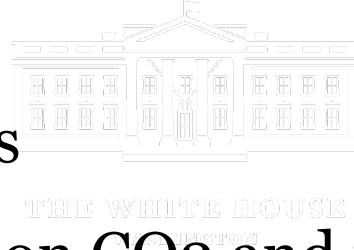
Motivation for Increased Focus on GHG Monitoring & Measurement

- U.S. has pledged to reduce nationwide GHG emissions by 50% by 2030 and achieve net-zero emissions by 2050.
 - Track progress towards GHG emissions targets
 - Assess effectiveness of GHG mitigation policies/actions
 - Inform mitigation efforts by municipalities and others
- The opportunity exists to further **enhance GHG emissions information & analyses** to take advantage of areas where **scientific and technological advances** are moving quickly and better **leverage current and upcoming observing systems**.
- “Rapidly increasing **demand from a range of users for trusted information** about GHG emissions” (Academies report, *Greenhouse Gas Emissions Information for Decision Making*)



Desired Monitoring System Characteristics

- Removals as well as emissions
- Natural as well as human sources
- All important GHGs; early focus on CO₂ and methane
- Global in scope; early focus on US
- High granularity in space and time
- Prompt reporting
- Integrate physical and activity-based approaches
- Data accessible and useable.



GHG Monitoring and Measurement Interagency Working Group (IWG)

- Co-led by OSTP, OMB, and Climate Policy Office



- Involves mission as well as research agencies:



- Department of Agriculture
- Department of Commerce
- Department of Defense
- Department of Energy
- Department of the Interior
- Department of State
- Environmental Protection Agency
- National Aeronautics and Space Administration
- National Science Foundation



How IWG's Work is Organized

- GHG IWG
 - Co-led by OSTP, OMB, Climate Policy Office
 - A mix of high-level career staff and program leads
- Under the GHG, there are 2 Technical Working Groups
 - Technical Working Group #1 – Agriculture and Forestry
 - Technical Working Group #2 – Broader framework for an integrated GHG monitoring & information system
- NASA, in collaboration with other agencies, will prototype capabilities that would constitute a GHG monitoring & information center.



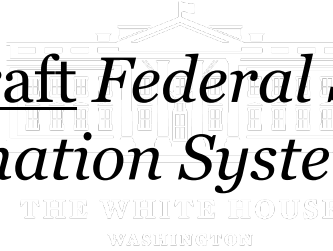
Status of GHG IWG Efforts

1. Assess capabilities and gaps
2. Draft a Federal strategy for proposed integrated monitoring and measurement system
3. Pursue demonstration projects (aka “use cases”)
 - Coal Mine Emissions
 - Oil & Gas Production
 - Urban GHG Emissions Information
 - Landfill Emissions
 - “Natural systems”
4. Increase interagency alignment and coordination, including in investments; starting to involve non-USG entities.



Federal Strategy to Advance an Integrated GHG Monitoring & Information System

- RFI to seek public comment on draft *Federal Strategy to Advance an Integrated U.S. GHG Monitoring and Information System*



- *Federal Strategy* content

I. Introduction

II. Framework for An Integrated U.S. GHG Monitoring & Information System

III. Near-Term Strategies

IV. Areas of Interest for Demonstration Projects

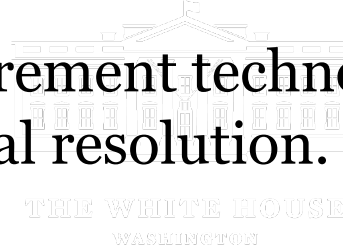
V. Linkage with International Efforts

- Agriculture and forest sectors discussed in a separate plan, to be released by USDA



Framework for Integrated U.S. GHG Monitoring & Information System

- Take advantage of advanced measurement technologies and new GHG observational data to improve spatial and temporal resolution.
- Rely on coordinated use/integration of:
 - Atmospheric-based approaches (“top down”) that utilize observations of atmospheric concentrations
 - Activity-based approaches (“bottom up”) that capture the magnitude of human-related activity resulting in emissions or removals taking place during a given time period
- Achieving convergence of results from both approaches is expected to be an iterative process that will lead to improvements in the consistency, accuracy, and specificity of GHG emissions information.



Prototype GHG Monitoring & Information System

- Emphasizes current and planned research capabilities, for example:
 - NOAA's Global GHG Reference Network (GGGRN) and modeling capabilities
 - NIST's Urban GHG Measurements Testbed
 - NASA GHG Satellites, Airborne Research Program and data assimilation systems
 - Upcoming extramural research investigations or projects funded by DOE, NSF, NOAA, & NASA
- Activity-based data from EPA, USDA, Energy Information Administration, and other sources
- Academic, NGO, and private-sector data to be incorporated as well.



Notional Demonstration Projects

Illuminate Paths Toward Improved Emissions Quantification

Oil and Gas Production Urban & Regional Areas

Agencies: EPA, NASA, DOE, NOAA

- Production Basins (Permian and others)
- Surface, airborne, and satellite obs.
- Coordination of significant efforts
- DOE Innovative Methane Measurement, Monitoring, and Mitigation Technologies
- NASA's EMIT Space Station Instrument
- Non-USG efforts

Agencies: NIST, NOAA, NASA

- NIST's Urban GHG Meas. Testbeds: (Indianapolis, LA, Northeast Corridor)
- NASA OCO-3 Strategic Area Mapping
- Airborne sampling and remote sensing
- Sustained measurement & analyses (Initial target – twice yearly)



Notional Demonstration Projects

Illuminate Paths Toward Improved Emissions Quantification

Landfills



Agencies: NIST, NOAA, EPA

- Couple atmospheric and activity-based data
- Collaborate with the landfill operator for simultaneity of flux & activity data.
- Multiple obs. methods – traditional & remote sensing (surface, airborne, satellite?)
- Sustained measurement & analyses to characterize diurnal to seasonal emissions (2 – 3-year duration)

Natural Systems

Agencies: USGS, DOE, NASA, NOAA, NSF, USDA

- Specific priority TBD
- Emissions can be significant
- They may be diffuse
- Crucial to clearly separate anthropogenic emissions and removals (CDR, CCUS, etc.) from biogenic sources and sinks.

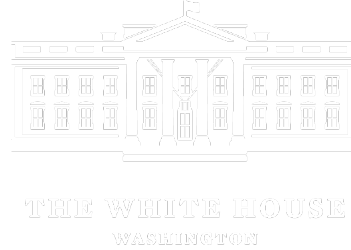


Near-Term Strategies

1. Enhance and expand measurement networks in the context of a multi-tiered observing approach
2. Refine modeling and data assimilation capabilities.
3. Accelerate the transition or scaling up of research capabilities to sustained use.
4. Coordinate better across USG.
5. Partner with entities external to USG.
6. Enhance data products that meet user needs.



Draft Federal Strategy to Advance an Integrated US GHG Monitoring and Information System



- Includes:
 - Motivations
 - Prototype system description
 - Near term approaches
 - Possible demonstration projects
- Draft strategy, RFI instructions, comment system on NASA NSPIRES page:
<https://go.nasa.gov/USGGMIDraftFederalStrategy>
- Deadline for comments: April 4



Draft Federal Strategy to Advance an Integrated US GHG Monitoring and Information System



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RFI responses will inform:

- Revisions for final GHG monitoring strategy
- Discussions on demonstration project areas, including timelines, agency contributions, potential partners
- Next steps on improving USG engagement and coordination with external government stakeholders





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Thank you!

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