

# NASA Energy Management Stakeholder Ideation Workshop

## Welcome and Introduction

**Dr. Richard Eckman**

**Applied Sciences Program &  
Atmospheric Composition  
Modeling & Analysis Program**

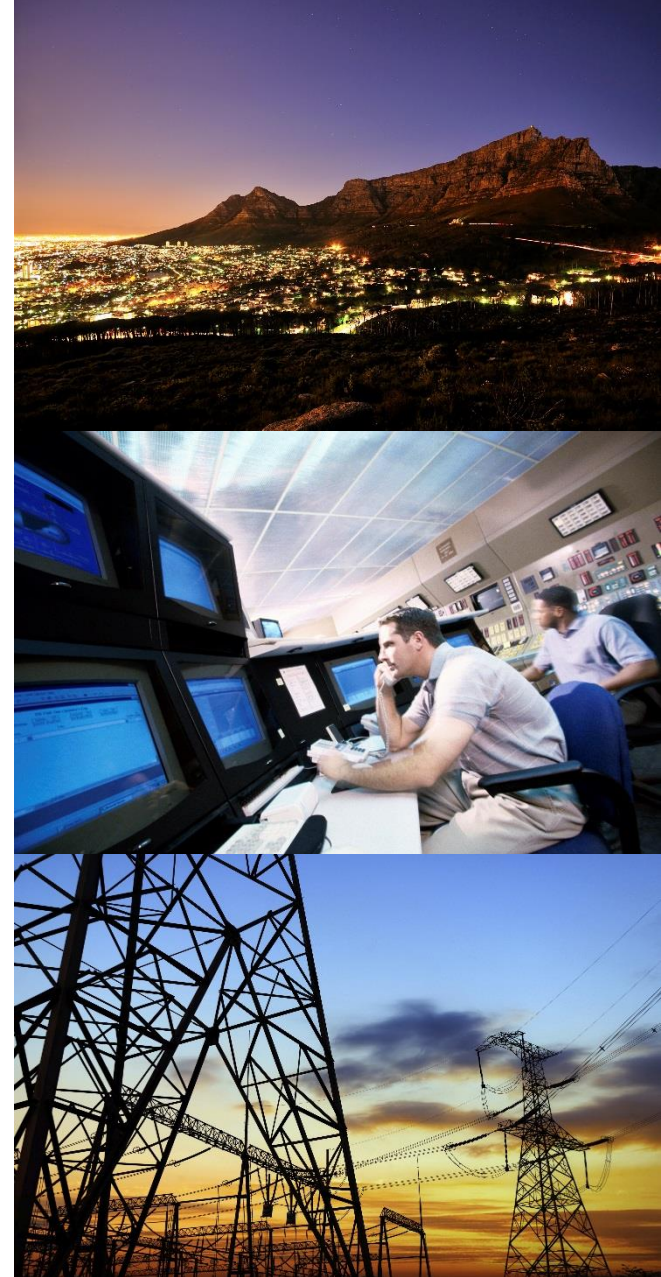
**NASA Headquarters / LaRC**

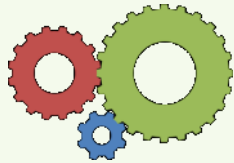
**April 27, 2016 • Arlington, Virginia, USA**



# Our Charge

- Identify where potential NASA investments could bring benefit to the energy sector focused on:
  - Renewable Energy Resources
  - Building Energy Efficiency
  - Electric Grid Operation and Planning, Integration of Renewables, and Smart Grids
  - Energy Sector Vulnerability and Resilience
  - Modern Energy Access in Developing Countries





## ***Societal & Economic Applications***

Generate, test, develop, enable adoption, and extol applications ideas for sustained uses of Earth observations in decisions and actions.



## ***Applications in Mission Planning***

Identify applications early and throughout mission lifecycle, integrate end-user needs in design and development, enable user feedback, and broaden advocacy.



## ***Capacity Development***

Build skills, workforce, and capabilities in US and developing countries to apply Earth obs. to benefit society and build economies.

***Innovative and practical uses of Earth observations***

## Emphasis in 4 Applications Areas



Health &  
Air Quality



Water  
Resources



Ecological  
Forecasting



Disasters



Wildland Fires

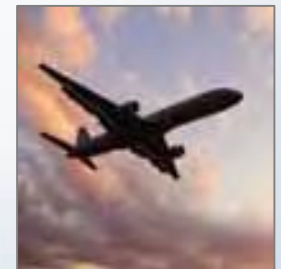
*Support opportunities in  
additional areas*



Agriculture / Food Security



Energy



Transportation

*Climate & weather play into all themes*

# Is it time for an Energy Applications Area??



**Should we formalize an Energy Applications Area?  
Is there enough potential, opportunity, and interest?**

**If so, what areas to prioritize?**

- » **Hydroelectric power**
- » **Solar energy**
- » **Wind power**
- » **Utility management**
- » **Non-renewables**
- » **Others**



**What decisions have high potential?**

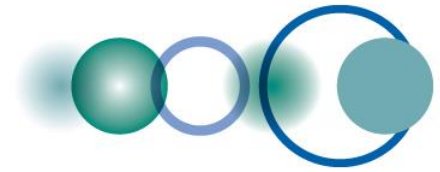
- » **Planning**
- » **Load forecasting and purchases**
- » **Siting**
- » **Design**
- » **Project feasibility analysis**
- » **Performance analysis**

***What missions, sensors, and data products might be of most use?***

***Should NASA seed applications?  
Or, should NASA focus on getting key data products to information brokers and let the energy community develop applications?***

# Energy Initiatives

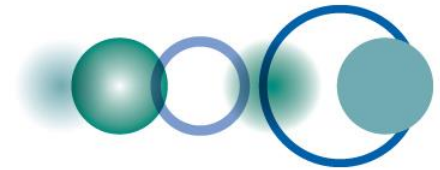




## Energy and Mineral Resources Management

### Description

- GEO will advocate the value of Earth observations, engage communities and deliver data and information in support of **Energy and Mineral Resources Management** by **enhancing the discovery, development and sustainable production** of mineral and **renewable energy resources**; in order to facilitate substantial increases in the share of renewable energy in the global energy mix, through usable, actionable information on resource assessment, monitoring and forecasting of intermittent energy sources, including solar, wind, ocean, hydropower, geo-thermal power and biomass.



## **GI-10 EO data and renewable energies (GEO Initiative)**

### **Objectives**

- Support the development of Earth observation products and services for energy management
- Promote collaboration between users and providers of Earth observation and information
- Encourage the use of Earth observation and information for informed renewable energy policy planning in developing and developed countries

### **2016 activities**

- Mobilization of the Energy Community of Practice
- Development of an Implementation Plan



# Ideation Workshop Purpose

- Build connections and relationships
- Raise awareness and build capacity
- Identify needs and challenges
- Incorporate NASA data into YOUR decision making processes
- Leverage and coordinate with other initiatives and programs



# Anticipated Workshop Outputs

- Potential topic areas or applications for funding (e.g., through traditional solicitations)
  - Low-hanging fruit
  - Mid-term opportunities
- Alternative business engagement models for NASA Applied Sciences Program potential Energy Management focus

# Focus on low hanging fruit in the near- and mid-term

Near-term  
(<2 years)

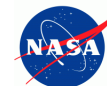
- Low effort, high impact low hanging fruit applications
- e.g. awareness building, slight product modifications, changes to delivery format

Mid-term  
(2-5 years)

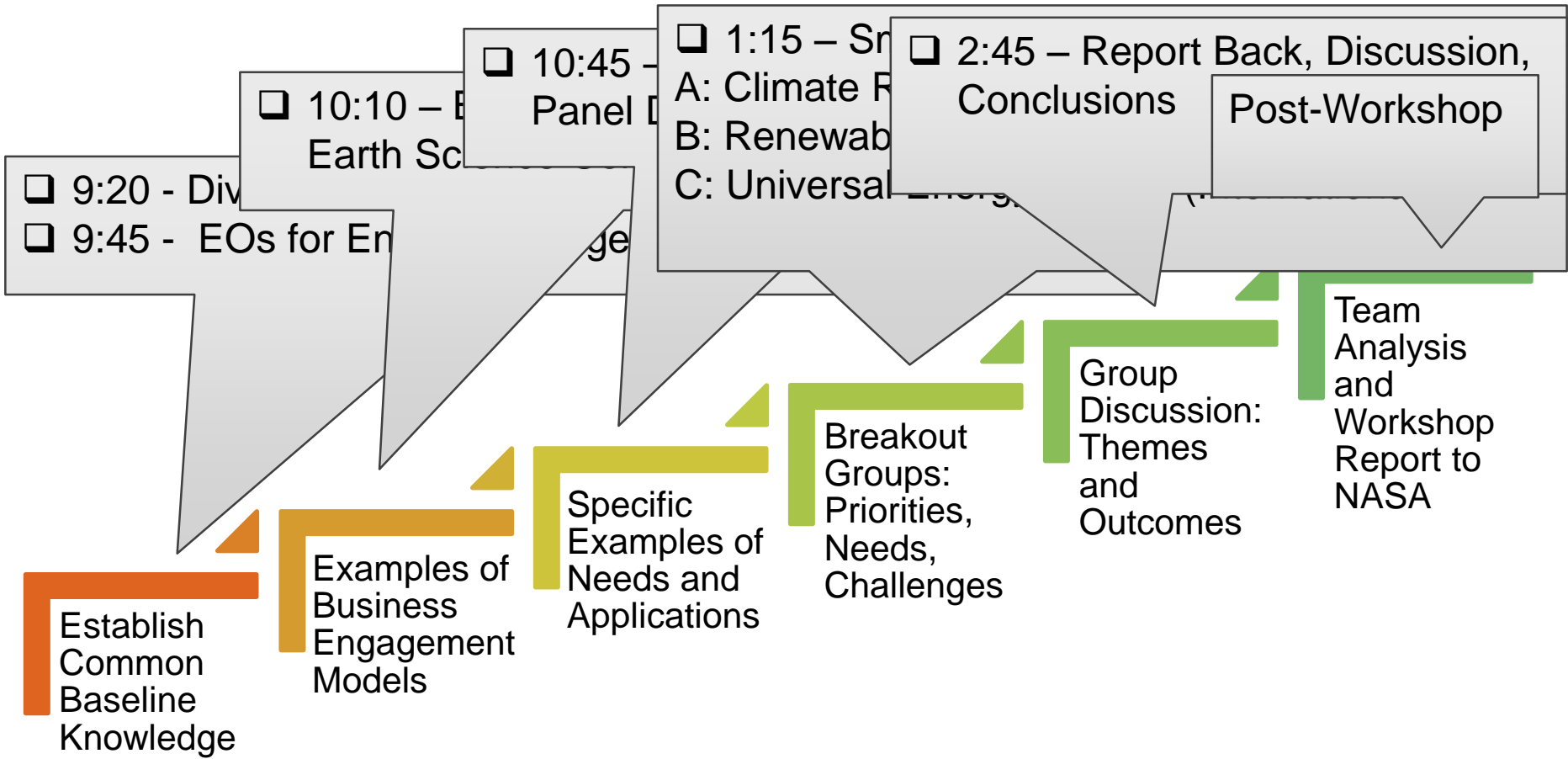
- Current missions with additional product development
- e.g. new algorithms, timeliness of release, better cal/val, testing

Longer-term  
(>5 years)

- Upcoming missions to meet emerging needs



# Towards Ideation Workshop Outputs



# Introductions

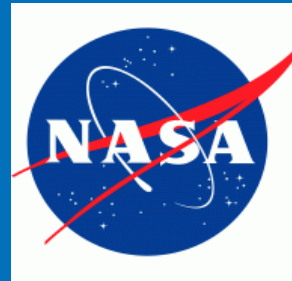
- Facilitation Team
- Participants (Round-the-Room)
  - Name
  - Title
  - Organization

# Announcements

- Bathrooms
- Refreshments/Lunch
- Wi-Fi
- Reporting from workshop
- Mobile devices and laptops
- Protocol for comments/questions
- Emergencies

# Thank you!

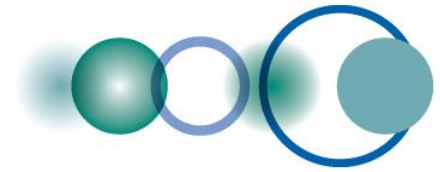
**Battelle**  
*The Business of Innovation*



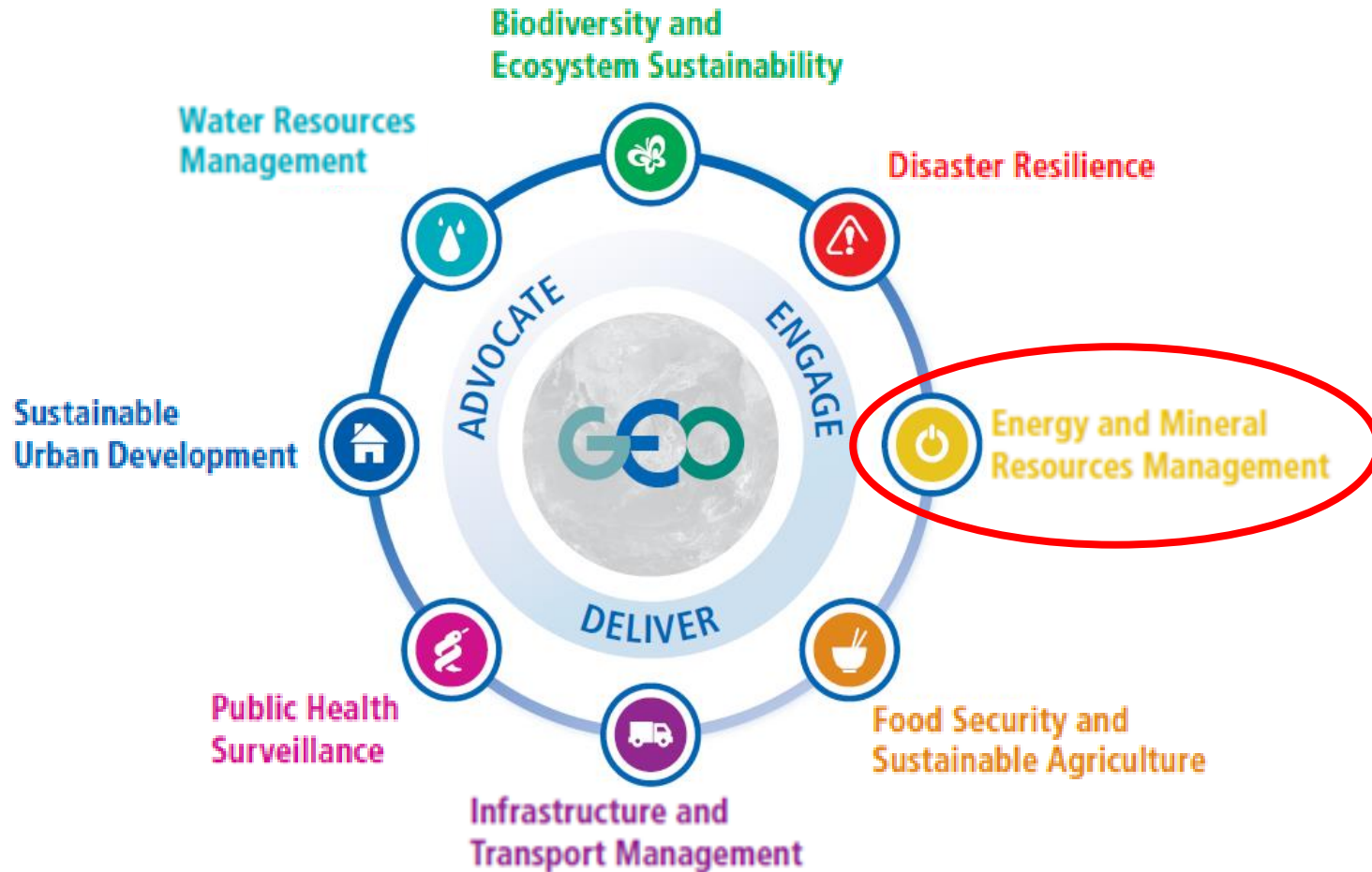
# Backup Slides

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# New Societal Benefit Areas



The Applied Sciences Program serves **three** primary functions:

## Science Advances and Technology Transfer

Applications projects can **further scientific techniques** (e.g., data assimilation, data fusion); interoperability standards drive technology; projects reduce perceived risk of its use and support transfer to private sector; operational use can provide testing and feedback on research algorithms and products; promote innovation; and generate applications knowledge and methodologies for the value of applications.

## Societal Benefits

The Program **serves the nation and society** by **helping partners improve their decision making** – natural resource management, public safety and health, disasters, etc.

## Outreach, Partnerships, and Marketing

**Cultivate new partners** to expand NASA's reach and awareness. Projects facilitating partners' sustained use of Earth science products helps induce demand for Earth science data and research. Applications of the products to policy and management issues shows the relevance of Earth science to key stakeholders. Promote and articulate socioeconomic benefits to highlight value.

