



# Transit Investments for Greenhouse Gas and Energy Reduction

## Assessment & Validation Program

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# History

- FY09 TIGGER Program Initiated within the American Recovery & Reinvestment Act (ARRA) of 2009.
- FY10 TIGGER Program continued through the Transportation, Housing and Urban Development, and Related Agencies Appropriations Act 2010(Pub. L. 111-68).
- FY11 TIGGER Program continued through The Department of Defense and Full-Year Continuing Appropriations Act, 2011 (Pub. L. 112-10).



# **TIGGER Program Objectives**

- Reduce GHG & Energy Consumption
- FTA Sustainability Program
- Focus Innovation & National Applicability
- Align & Leverage Existing DOT/FTA Strategic Initiatives
- Identify of Research Gaps
- Add to Existing Body of Knowledge



# TIGGER Program Facts

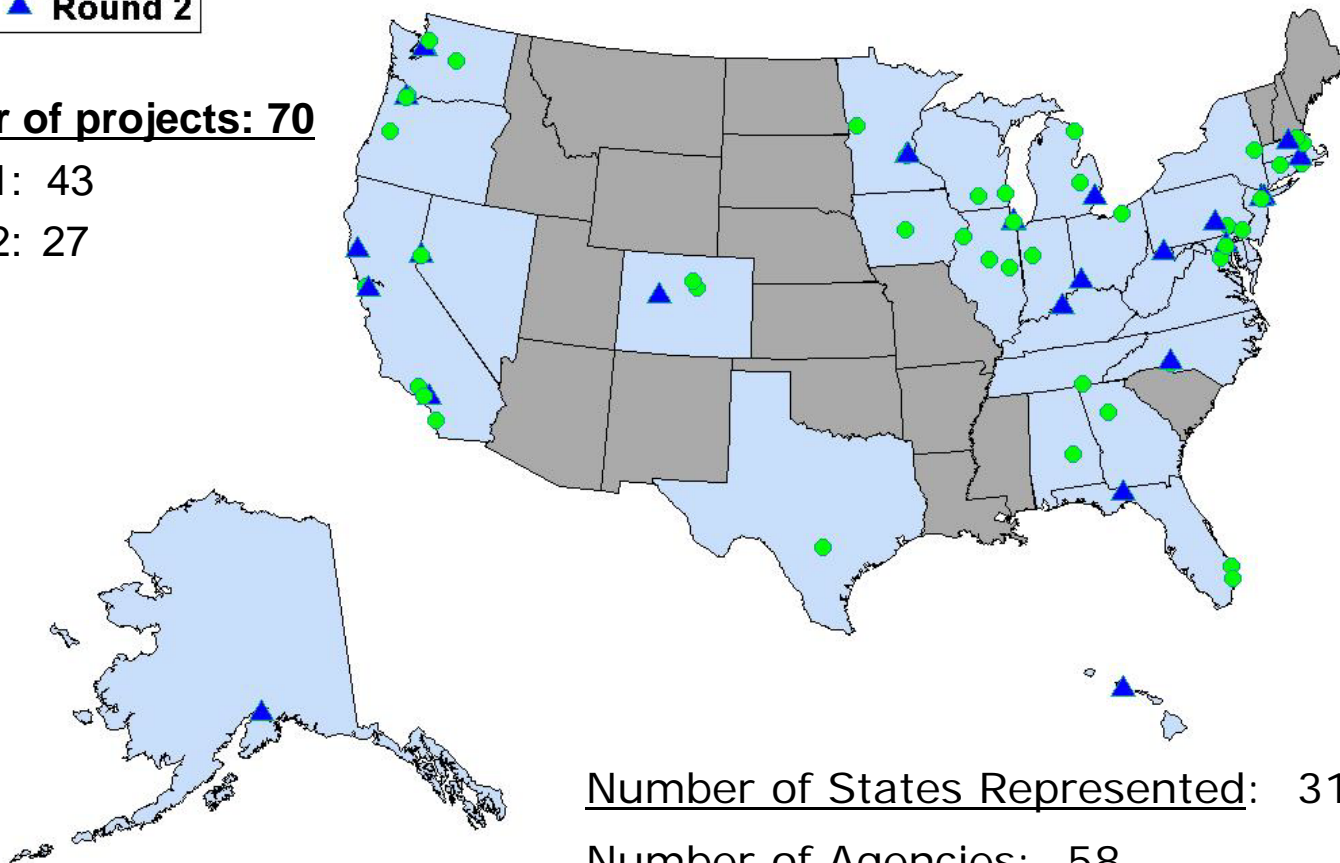
## TIGGER Site Locations

- Round 1
- ▲ Round 2

**Number of projects: 70**

Round 1: 43

Round 2: 27



**Number of States Represented: 31**

**Number of Agencies: 58**





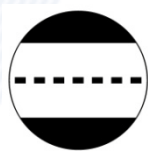
## TIGGER Program Facts

Breakdown of technology types:

Technology Type	Number of Projects
Building Efficiency Improvements	16
Bus Efficiency Projects	31
Rail Technology Projects	7
Renewable Power	23



Building



Bus



Rail



Solar



Wind



Geothermal



Fuel Cell



# Special TIGGER Reporting Requirements

*Recipients of All TIGGER funds must report on annual basis:*

- Actual annual energy consumed within the project scope attributable to the investment for energy consumption reduction projects; and/or
- Actual greenhouse gas emissions within the project scope attributable to the investment for greenhouse gas reduction projects; and/or
- Actual annual reductions or increases in operating costs attributable to the investment for each TIGGER project.



# **Third Party Assessment**

- Inter-agency Agreement with NREL
- History of technology validation
  - Heavy-Vehicle Technology
  - National Fuel Cell Bus Program
- Document program progress
- Demonstrate Government Transparency
- Follow up on Program Objectives



## Assessment Goals

- Determine the success of the TIGGER Program and report the results to Congress
- Maximize the experience of grantees by documenting and sharing implementation lessons with the transit industry
- Explore which technologies have the most potential to reduce energy and GHGs
- Consider National Applicability and the possibility of expanding to more agencies
- Ensure maximum benefit from federal funding

**Participation from each project sponsor is essential to make this a successful effort!**





# Data Collection for TIGGER Assessment and Validation Program



**Leslie Eudy**

**Team members:**

**Rob Burgess**

**John Lewis**

**TIGGER Webinar**

**June 28, 2011**

# Overview

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- FTA Reporting Requirements
- Summary of NREL Role
- Project Fact Sheets & Data Needs
- Annual Assessment Reports & Data Needs
- Case Studies
- NREL Contacts

# FTA Reporting Requirements

## Three required measures:

- Energy Reduction – amount of energy savings attributed to project
- Greenhouse Gas (GHG) Reduction – amount of GHG emission savings attributable to project
- Operating costs – total cost to operate project (positive or negative)



# Summary of NREL Role

The National Renewable Energy Laboratory is a Department of Energy Laboratory focused on renewable energy and energy efficiency.

NREL will provide third-party assessment and validation of TIGGER Program

- Project Fact Sheets – High-level informative overview of each project
- Annual Assessment Reports – document status and progress of projects and analyze impacts to the program
- Case Studies – detailed assessment of a selection of projects





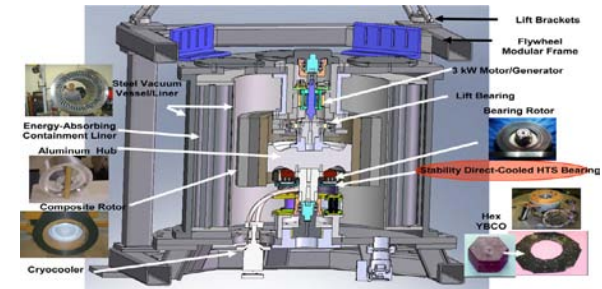
# Project Fact Sheets

- High-level informative overview of project
  - Description of TIGGER program
  - Details on the project
  - Description of the technologies implemented
  - Expected GHG and/or energy savings
  - Description of transit agency
- Two-page consistent format
- Available as a download on the TIGGER website
- TIGGER Round 1 projects will be completed by the end of July
- TIGGER Round 2 projects will be completed by the end of October (provided grants are in place)



# Data Needs for Fact Sheets:

- Name of contact person for each project
- Review draft project details for accuracy
  - Project description
  - Technology details
  - Expected GHG or energy savings
  - Transit agency description
- Provide corrections/additional info as needed
- Provide pictures (with photo release)
- Review of final Fact Sheet in lay-out form
  - Will need a quick turn-around on this review



# Annual Assessment Reports

- Description of projects and technologies
- Assessment of GHG and energy savings
- Status of project accomplishments and progress
- Impacts of program and each project's contribution to meeting goals
- National applicability of projects
- First report scheduled for November 2011



# Data Needs for Annual Assessment Reports

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- Energy reduction projects: power/fuel consumption data will be used to determine savings
- GHG reduction projects: power/fuel consumption data also shows reductions in emissions
- Operating costs: data include cost for fuel, electricity, and maintenance of new technology
- Must have before and after data for at least one year



# Data Needs for Annual Assessment Reports

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Specific data depends on the type of technology

- Bus projects (new purchases or technology retrofits)
  - Fueling records (to determine fuel economy)
  - Fuel cost
  - Maintenance cost for the new technology
  - Baseline bus data to determine fuel/energy savings
- Building efficiency projects
  - Power consumption – either by metering or utility bills
  - Maintenance costs for new technology
- Renewable power projects (solar, wind, fuel cell)
  - Power production
  - Power consumption – either by metering or utility bills
  - Maintenance costs for new technology

# Case Studies

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- Detailed assessment of a selection of projects or specific technology
  - Case studies will include various technology and project types
- NREL has provided FTA a list of recommended projects for case studies
- Once FTA has agreed to the selection, NREL will work with the selected project teams to discuss additional data needs
- A separate project report will be produced that includes additional information and data analysis

# NREL Contacts

## Team Members

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# TIGGER Questions?

**[www.fta.dot.gov/TIGGER](http://www.fta.dot.gov/TIGGER)**







# Key FTA Contacts

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