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Vision Study

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INTRODUCTION

DOE has recently launched a geothermal vision study. The study will:
- Assess the recent history of geothermal development in the United States
- Develop a credible analysis of geothermal growth scenarios for 2020, 2030, and 2050 that identify the opportunities and challenges to increase U.S. geothermal deployment
- Assess and quantify the range of costs, benefits and impacts of the scenarios
- Identify investment strategies to achieve the high-growth scenario target and articulate a clear GTO investment strategy to achieve this outcome Evaluate multiple geothermal growth scenarios for 2020, 2030, and 2050
- Address geothermal applications beyond electricity

The study will evaluate the role and opportunity for geothermal energy to contribute to a "high renewable" energy scenario for the year 2050. Among other accomplishments this will represent the first major study to assess the impact that Enhanced Geothermal Systems (EGS) can play in an energy future that has 80% of the electricity in the United States provided by geothermal energy.

Technical contributors to the study include NREL, INEL, Sandia, LBNL

METHODS

The Geothermal Vision Study will use the NREL ReEDS model to evaluate a range of potential geothermal growth scenarios for 2020, 2030 and 2050 across multiple market sectors. Market sectors will include existing and potential hydrothermal, electrical and non-electrical usages, new EGS sector, and other value streams. The study will be based on robust data, modeling and analysis and will be reviewed by a diverse group of Peer Reviewers multiple times during the effort.
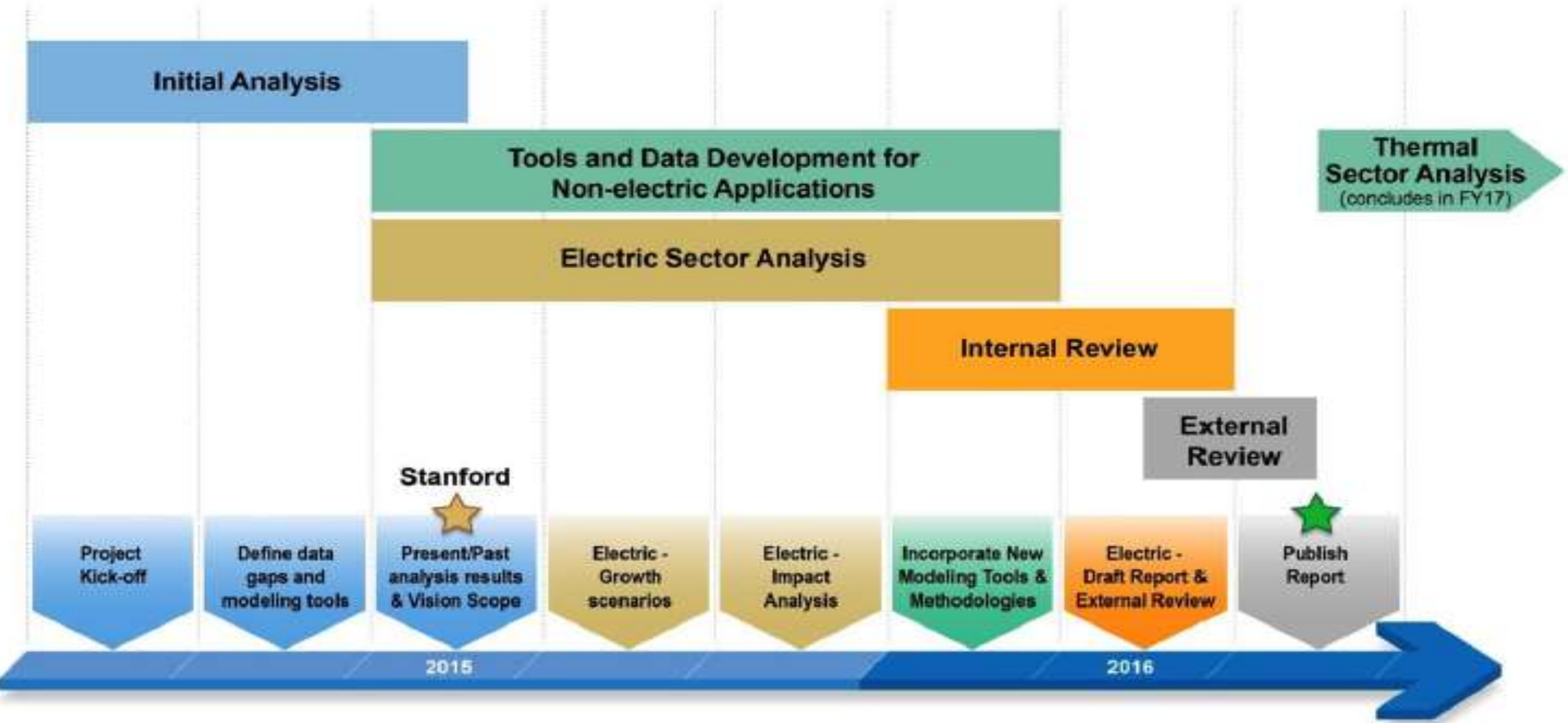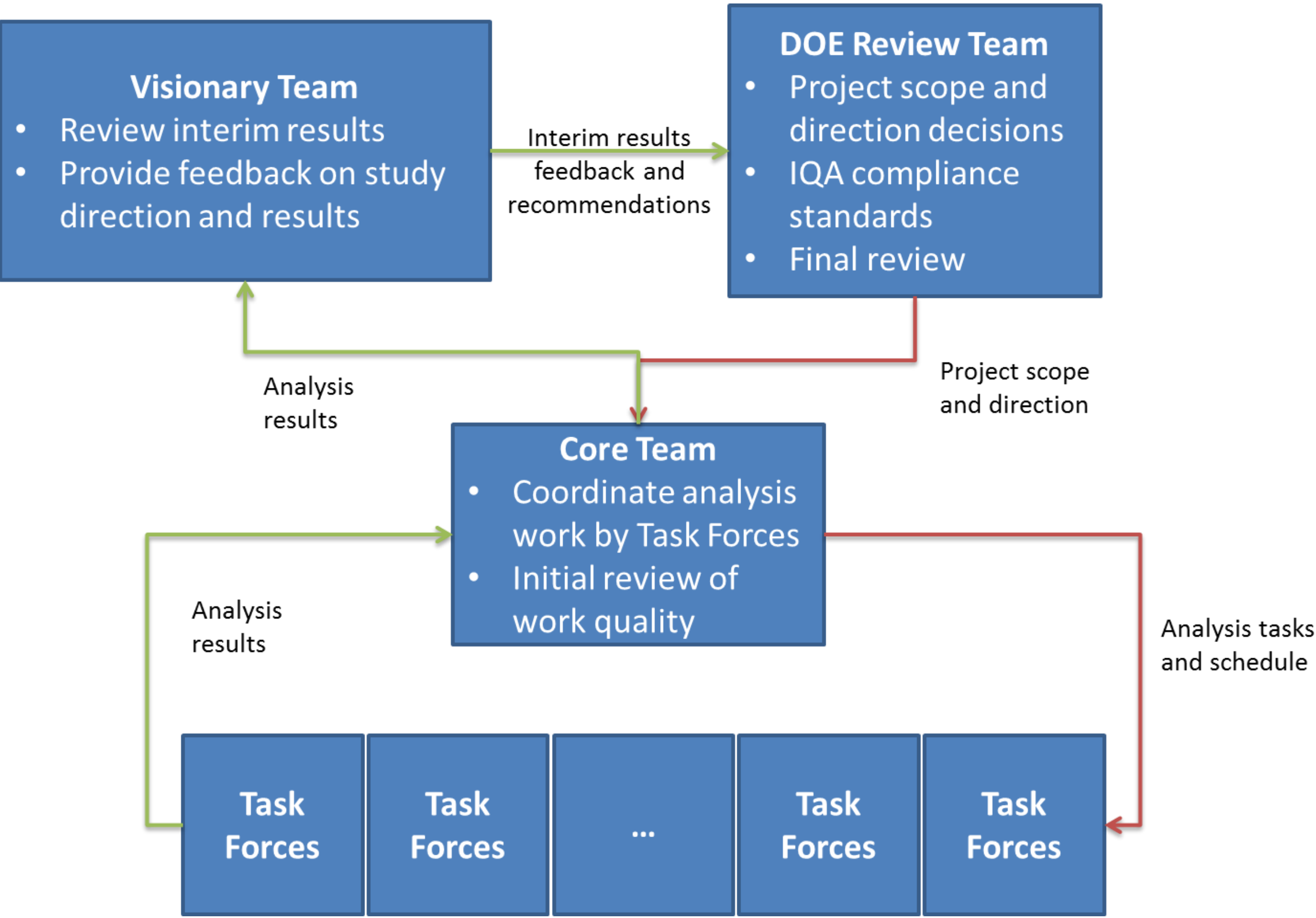

The Vision Study will be carried out in two phases. The first phase aims to develop and publish a Geothermal Vision Study focused on the geothermal electricity generation sector. The second phase will develop a Geothermal Vision Study for thermal applications of geothermal resources.
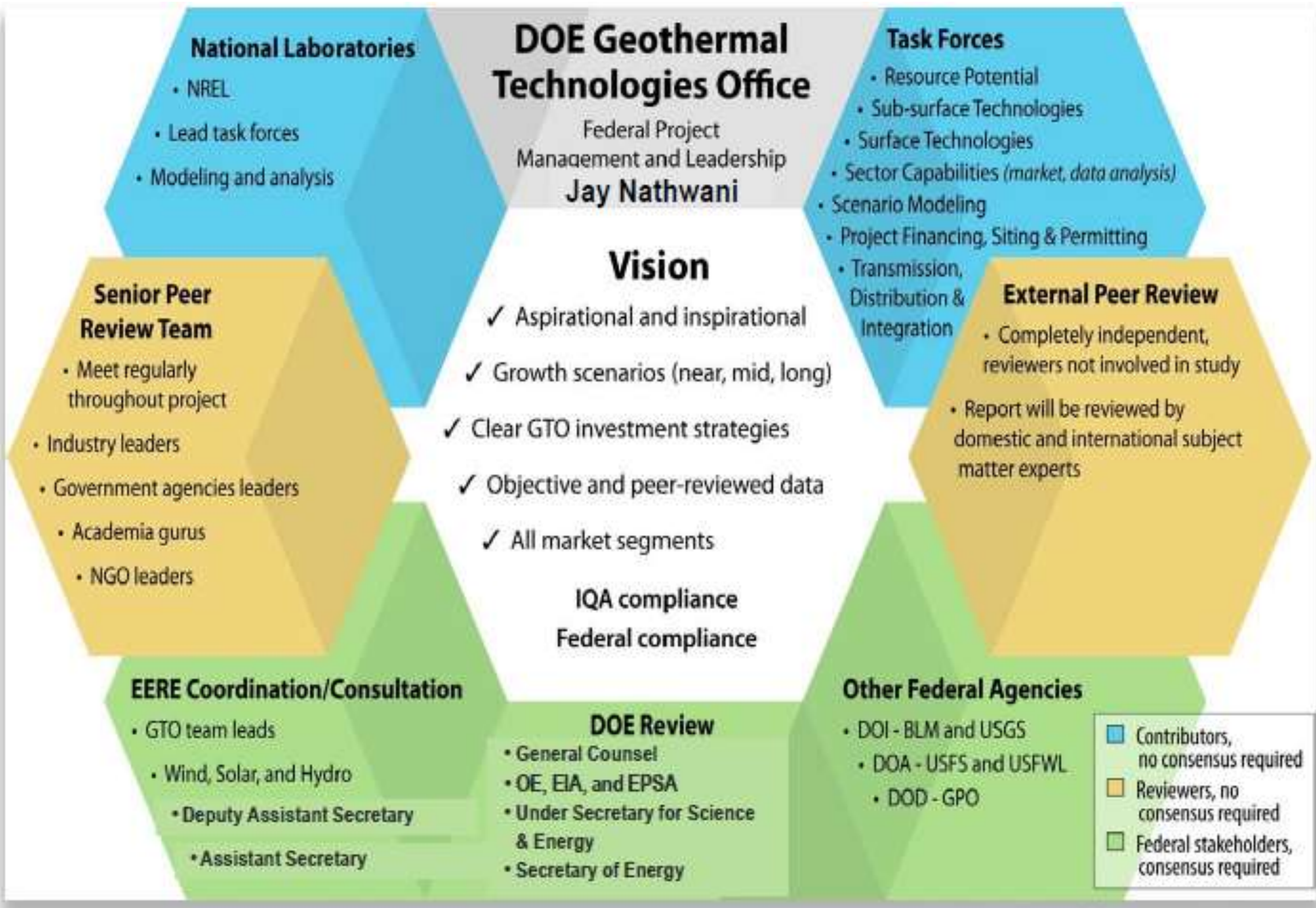
RESULTS

The first half of FY15 has focused on development of the teams and task forces for carrying out the Geothermal Vision Study.

- Visionary Team selected and assembled. The Visionary Team has met twice (February and April) to discuss the scope and direction of the Geothermal Vision Study.

- Task Force roles and leads selected. The task forces will be led by NREL, Idaho National Laboratory, Lawrence Berkeley National Laboratory, and Sandia National Laboratory.

- Preliminary geothermal growth scenarios were run using the Renewable Energy Deployment System (ReEDS) model that has been utilized in Vision Studies by the EERE Wind and Solar programs. The results of the preliminary model runs were presented to the Visionary Team in April.

CONCLUSIONS and FUTURE WORK

Development of the Geothermal Vision Study will continue with a focus on developing robust data, modeling and analysis. The work will be carried out by the task forces and will focus on the following areas:

1. Exploration
2. Geothermal Resource Potential
3. Reservoir Management and Development
4. Techno-Economic Characteristics
5. Potential to Penetration (Market Penetration Modeling and Geothermal Growth Scenarios)
6. Social and Environmental Impacts
7. Soft Costs (Non-technical Barriers to Deployment)

Efforts are also underway to develop the tools and data necessary for the thermal (non-electric) applications of geothermal resources that will be the focus of the FY17 Geothermal Vision Study. Areas of study include direct use geothermal applications, mineral recovery from geothermal resources, and desalination using low temperature geothermal resources.

ACKNOWLEDGEMENTS