

Natural Gas STAR

Shell Exploration & Production

Partner Experience

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HSSE in Projects

Shell
EPW- HSSE



Shell Exploration & Production (E&P)

- The U.S. Shell Exploration & Production Company - SEPCo- is the largest of the Shell E&P operating units, accounting for 15 percent of Shell's worldwide oil and gas production.
- Shell has been operating in the Gulf of Mexico for five decades.
 - Average of 370,000 barrels of oil equivalent per day
 - our oil and gas production in the Gulf accounts for more than 80 percent of our overall U.S. production.



Shell's History in Natural Gas STAR



- Joined the program in 1995
- Annual gas production: ~420 Bcf
- Since joining, SEPCo has achieved cumulative emission reductions of 11,118,185 Mcf



Shell's History in Natural Gas STAR

- Steady reductions each year
- Big jump in reductions in 2003 (Partner Reported Opportunities or "PROs")
- Began realizing benefits of program about this time



Shell Global Environmental Standards

- Shell Group has an HSE Commitment, part of which states “no harm to the environment.”
- Shell Policy states: “Every Shell Company shall have a systematic approach... to ensure compliance with the law and to achieve **continuous performance improvement.**”
- The purpose of the Shell Group Global Environmental Standards is to form a baseline for continuous improvement per our policy



Shell Global Environmental Standards

- Updated in 2007
- The Standards are **mandatory** and apply to all Shell companies and all joint ventures where we have operational control.
- Shell's Executive Directors are responsible for implementation of these standards.
- Compliance is reported annually through the Business Assurance Letter and tested by HSE management system (HSE-MS) audits.



Shell Global Environmental Standards

The GES include 14 mandatory Standards

Examples:

- External certification (e.g., ISO 14001)
- CFCs and Halons
- Spill response preparedness
- Greenhouse Gases, and
- Energy use and efficiency



Shell Global Environmental Standards

GES - Energy Use & Efficiency

- *Energy use shall be actively monitored at all major installations and 5-year Energy Management Plans shall be in place that describe the continuous improvement process to maximize the efficiency of energy use and throughput.*
- *A demonstration of how energy efficiency considerations have been included in the design of the project shall be made for new and modified major installations.*



Shell Global Environmental Standards

GES – Greenhouse Gases

- *All major installations shall manage GHG emissions, taking into account the carbon value, to maximize the business opportunity by:*
- *Implementing 5-year greenhouse gas (GHG) management plans which capture the inherent value of GHG emission reduction opportunities within the installation according to the relevant market.*
- *Quantifying GHG emissions at a frequency suitable for the relevant legal framework, but reporting at least annually.*



Energy Assessments

- Feb. 2004: SEPCo established a task force charged to develop a sustainable energy management plan for its assets
- Plan(s) to be consistent with Shell Global Environmental Standard requirements, while driving energy usage to as low as reasonably practicable (ALARP) status
- GoM production facilities of SEPCo were included in the scope of assets evaluated by the task force.



Energy Assessments

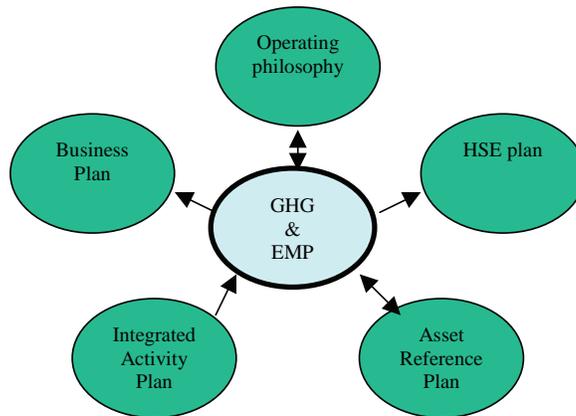
Several task force deliverables were identified, which include;

1. Documented baseline energy consumption by asset,
2. Documented ALARP approach for SEPCo with a template for use by assets,
3. Recommended key performance indicators (KPIs),
4. Recommended energy reduction targets,
5. Implementation strategy and framework, and
6. Prioritized list of opportunities generated from pilot assessments.



Energy Assessments

This plan is aligned with the following asset plans and processes with the interdependencies illustrated below:



Energy Assessments

- The GHG/EMP “plans” are live documents
- Updates (yearly) shall coincide with the business planning and capital allocation processes.
- Preliminary or working draft version shall be issued prior to commencement of the business planning cycle
- Final version (to be signed off by Asset Manager) issued upon regional leadership endorsement of the business plan.

Shell Global Solutions



Shell Global Solutions – US (Shell GSUS) provides business and operational consultancy, technical services and research and development expertise to the energy and processing industries worldwide.

The scale of support can range from the provision of innovative - but field-tested - technologies through to assistance with the implementation of management practices and long-term strategic support in areas **such as emissions management.**



Energy Assessments

- SEPCo contacted Shell GSUS in March 2005 for the development of an energy assessment program.
- SEPCo and Shell GSUS initiated a pilot energy assessment for the Auger TLP in 2005.
- In 2006, seven GoM production platforms were identified for energy assessments.
- In 2007, several onshore facilities were completed as well as some additional offshore platforms



Energy Assessments

Shell GSUS began to look at each facility in detail for items such as:

- Gas Consumption Levels: Fuel Gas and Flaring
- Present Utility Consumption Levels
- Fuel Gas System and Power Supply
- Energy Conservation Measures In Place



Energy Assessments

- Then each site was given a list of recommendations – called Energy Conservation Measures (ECM)
- For example:
 - Reduce Product Oil Pump Discharge Pressure
 - Field Gas Compressor Optimization
 - Reduce Flaring
 - Check the blanket gas meter – there is High Blanket Gas Flow



Energy Assessment Reports

- ECM's were detailed out with
 - Problem Definition (in detail with flow rates and comparisons to other Shell facilities)
 - Solution / Recommendation
 - Potential Savings (in Mcf & \$\$\$) , and
 - Estimated Capital Costs



Benefit of Shell GSUS

Shell GSUS has brought lots of knowledge and experience to Shell E&P, and is able to provide a communication and technical link between our upstream and downstream operations.



Benefit of Shell GSUS

- Sharing of Best Practices
- Consultant that is internal and is still able to see all facilities objectively
- Review of our existing procedures, and are we following them!



Handover of Reports to Operations

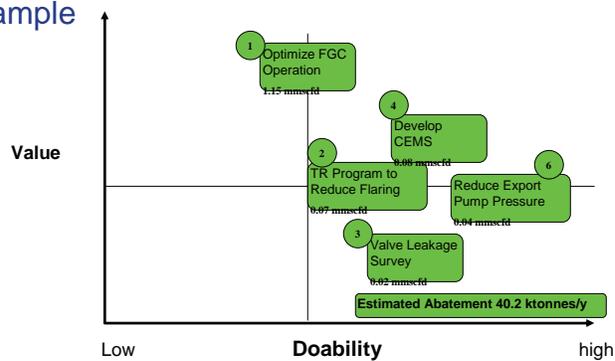
- Capital costs an issue
- Easy to address low investment recommendations (e.g., reduce flaring)



Handover of Reports to Operations

Assessment of the project “doability” (measure of resource availability and simplicity) against the value (emission reduction potential) was carried out.

example



Handover of Reports to Operations

So where are we now?

- Still some offshore assets to asses
- Working with production leadership to decide which Energy Key Performance Indicators (KPIs) that all locations will use to monitor energy use and efficiency.
- PI data system could calculate the KPIs automatically as part of the AMR (Automated Morning Report) process in place.



Questions?

