

## **Do More With Less - Design for the Triple Bottom Line for Sustainable Development & Footprint Optimization**

As the engineering systems applied to produce energy get more complex, we must seek to create less wasteful designs, processes, and systems. And we must better account for the "costs and benefits" of hard-to-value drivers (social, environmental, broader economic). This presentation will discuss how we apply sustainable development and footprint optimization concepts to developing tight rock (shale)-based oil and gas reservoirs.

In planning, design, and decision-making we address social, environmental and economic factors to reduce risk, improve performance and create value for the company, the environment and stakeholders. We manage our "footprint" as a system of materials and energy that changes over time. ISO life cycle assessment is used to model our footprint and understand the environmental tradeoffs of different alternatives.

This presentation will define key concepts that guide our thinking, outline the questions we ask, and highlight some success stories and learnings from implementing "triple bottom line" thinking.

### **Key Concepts:**

1. Everybody plays a role - each of us has an opportunity to improve the industrial system that is our "footprint".
2. Manage footprint as a system of materials & energy that changes over time.
3. Question "Business as Usual" (I'll share "questions to ask" and ex. successes).
4. Frame for SEE drivers and value them in assessing alternatives (traditional financial perspective is inadequate)
5. Integrate (across activities, functions, the asset life).
6. Partner with procurement and suppliers