A Six Sigma Approach to Energy Management

- Improving IBM’s Integrated Supply Chain Operations
Topics

1. Employee involvement
2. Lean Six Sigma
3. Green Sigma™
4. Results
The challenge:
Improve the environmental profile of IBM’s supply chain operations

200+ people volunteer their time and skills
Lean Six Sigma (LSS)

A method for analyzing operations and improving performance:

- **Goals**
  - Increase quality
  - Reduce costs

- **Activities**
  - Add, restructure or eliminate activities

**Lean:** A method to eliminate waste
Gets quick wins

**Six Sigma:** A data-driven method to optimize processes
Needs to know relationships in the environment for statistical analysis
LSS + Innovation = Green Sigma™

What Green Sigma™ is:
- An enhanced LSS method for environmental issues
- A system to monitor operations against an ideal profile
  - Ensures gains through alerts, gathers data for reporting and analysis

How it differs from LSS
- Environmental goal - energy reduction from all aspects of facility and operational process
- Employs LSS, adds site assessment method, energy user profiles
- Site monitoring system with advanced analytics

How Green Sigma™ started:
- Watson Research Center - meters and sensors
- A Dublin LSS black belt, IBM’s deep environmental focus and “volunteer enthusiasm”
Green Sigma™ addresses Energy, Water, CO2, Waste
The Green Sigma™ Journey

1. Concept & Planning
2. Define KPI’s Reduction Opportunities
3. Meters, Base loads
4. Deploy the Console
5. Optimise Processes Devices
6. Control, Alerts, Reports

Lean Phase

Six Sigma Phase
Green Sigma™ – Energy Dashboard – Load Shedding
Green Sigma™ benefits to IBM’s Integrated Supply Chain

- Quick wins: Over $1M 2009 energy savings total to date for two sites

- Site managers have a tool and data to better manage energy:
  - Significant energy using devices identified in infrastructure and manufacturing floor
  - Six Sigma analyses bearing fruit
  - Data gives clear view of best ROI
  - Energy console alerts avoid backsliding

- Green Sigma being applied at six more sites by year end

- Supports a culture of continuous improvement & environmental performance innovation