



# Natural Gas STAR

## Northern Natural Gas Company

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13<sup>th</sup> Annual Natural Gas STAR  
Implementation Workshop  
October 23-25, 2006  
Houston, Texas



# Outline

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- ★ Who is Northern Natural Gas Company?
- ★ Northern's STAR I Program
- ★ Northern's STAR II Program
- ★ Overview of dump valves
- ★ Environmental RESPECT Policy



# Northern Natural Gas System Map



- ★ 16,000 miles of pipeline
- ★ 103 Compressor Stations
- ★ 1000 employees
- ★ 2600 TBSs (Gate Stations)



# STAR I & STAR II Programs

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- ★ STAR I – The volume of methane from a Facility Leakage Audit (FLA) that was repaired. Un-repaired leaks go into our “unaccounted for” volumes
- ★ STAR II – The volume of methane that was conserved during normal pipeline venting operations.

# STAR I GHG – EPA STAR - UAF

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## ★ Mapping

## ★ Facility Leakage Audit (FLA)

- Remote Methane Leak Detector (RMLD) - ppm
- IR Camera – Gas FindIR – ppm & LPM
- HiFlow - LPM

## ★ Repairs reported to EPA STAR

## ★ Unaccounted for (UAF)

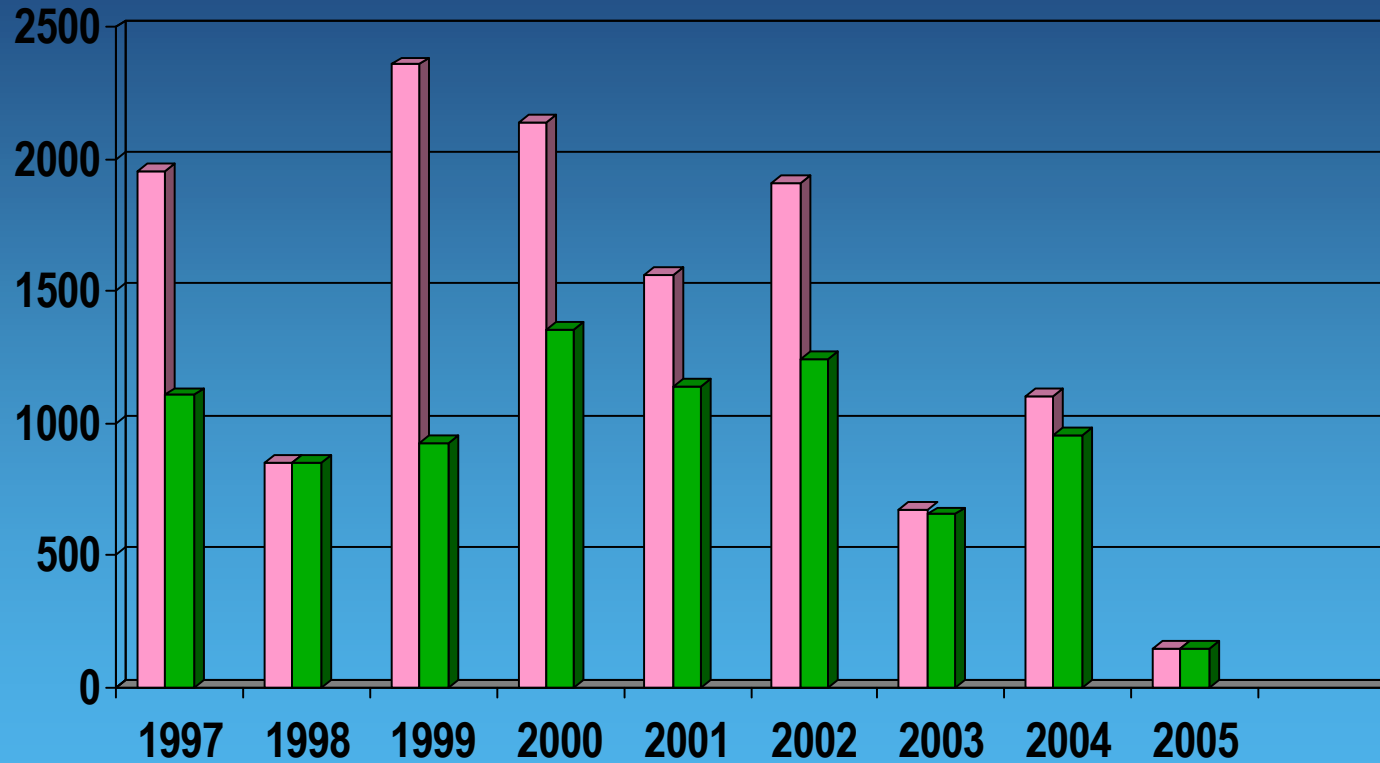
# STAR I - Natural Gas Leak - FLA

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- ★ Separator Dump Valves
- ★ Rod Packing
- ★ Unit Valves/ Station Blowdown

# Facility Leakage Audit (FLA)



# STAR II – Emission Conservation

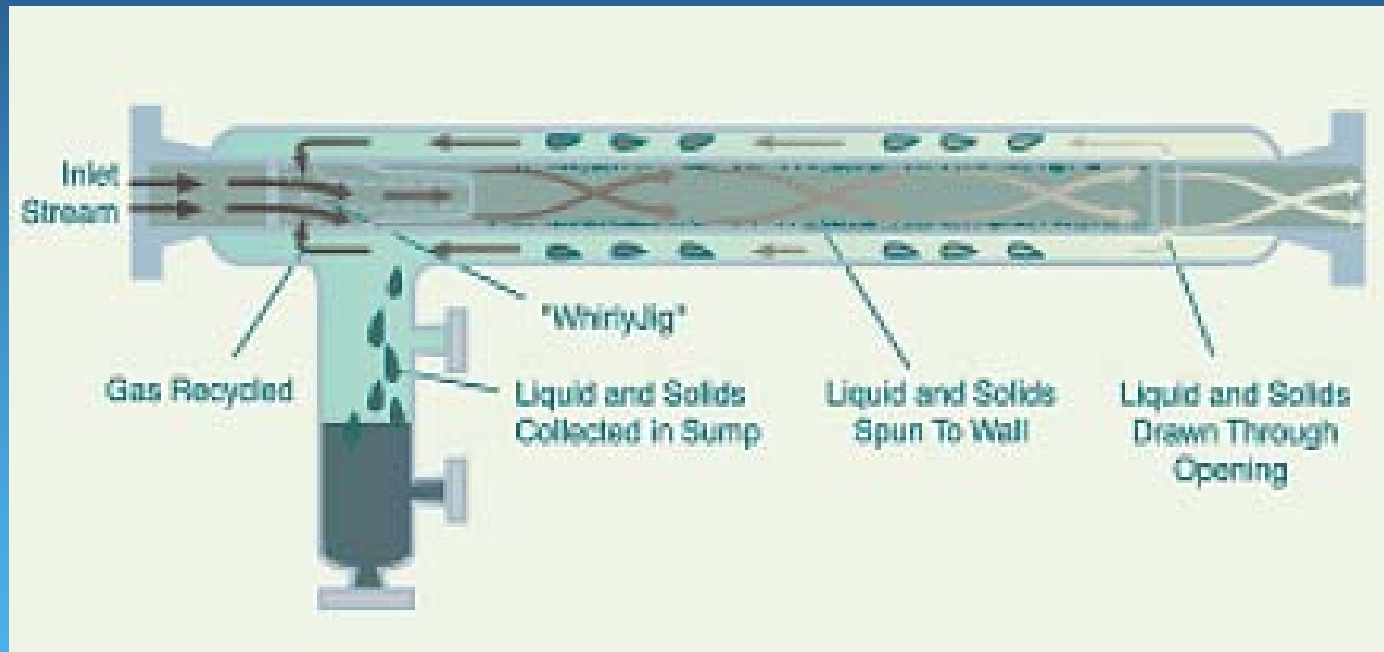
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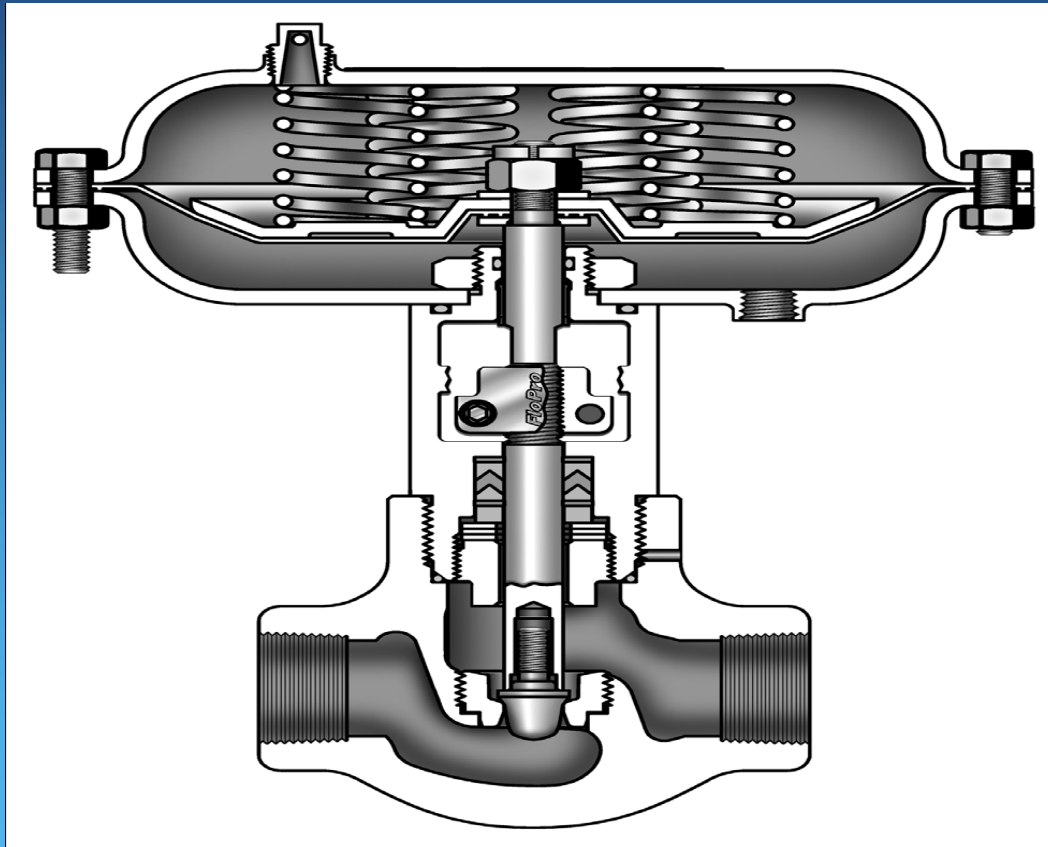
- ★ Pressure Reduction
  - Work
  - Blowdown
  
- ★ Emergency Shut Down - ESD
- ★ Vapor Recovery Units - VRU
- ★ Hot Taps



# Separator



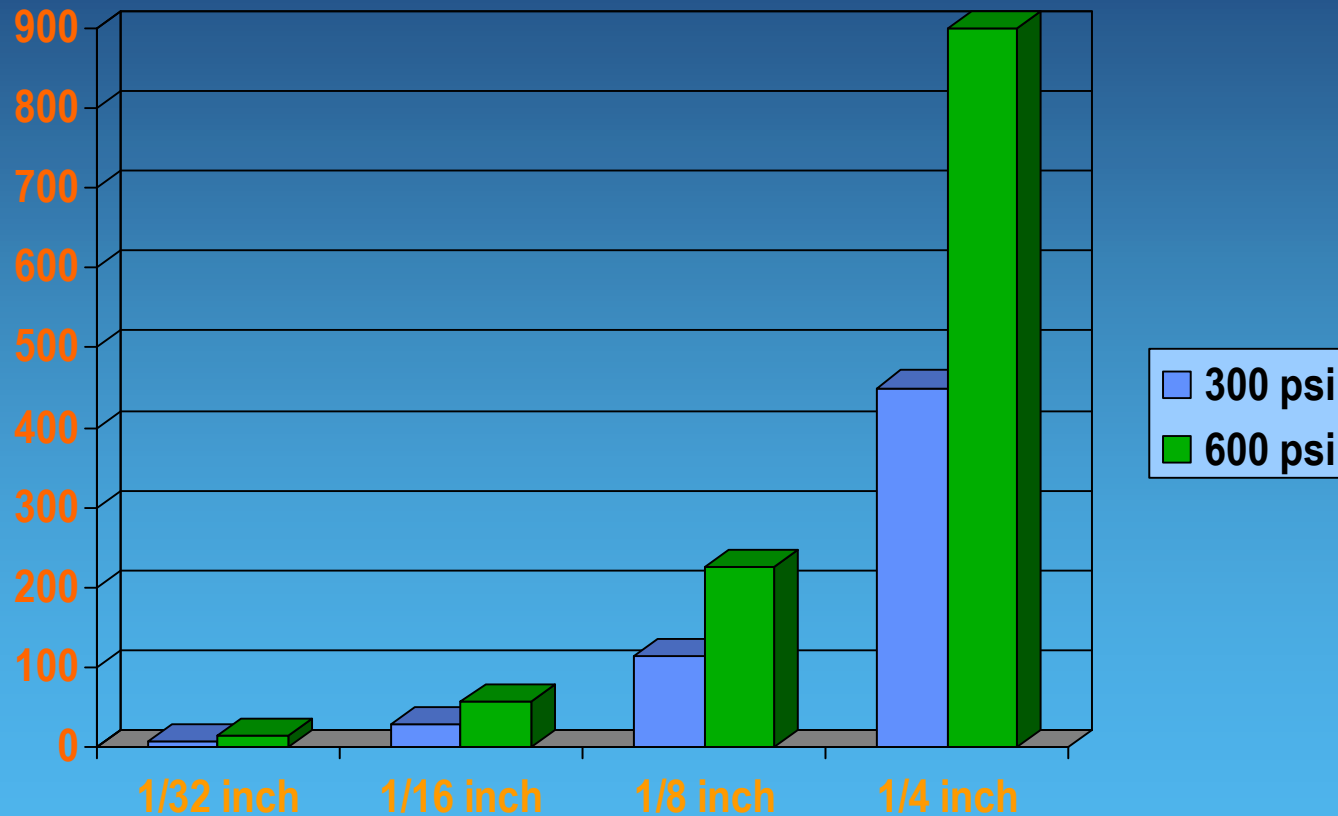
# Dump Valve



# Separator Dump Valve Leak



# Gas Loss – MCF/Day



# Repaired Dump Valve



# Separator Dump Valve Data

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★ 435 dump valves      2.2 cu. ft./min.

★ 41 @ one station

★ Inspection

- Daily rounds – feel & listen
- Trim inspection & repair

★ 435 dump valves      0.2 cu. ft./min.

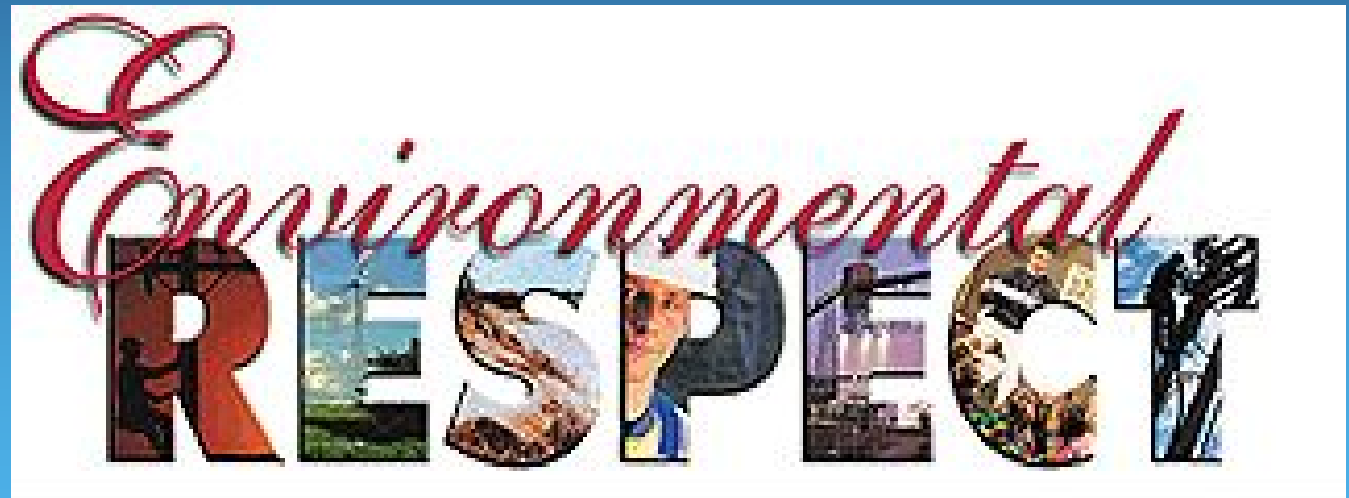
★ Volume from dumping operation – flash gas

★ Purge volume

# MidAmerican Energy RESPECT Policy



- ★ Respect
- ★ Efficiency
- ★ Stewardship
- ★ Performance
- ★ Evaluation
- ★ Communication
- ★ Training



# Question?

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# Contact Information

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