

THE NEAR-ZERO ZONE: INSPIRING INDUSTRIAL ENERGY EFFICIENCY IN TURKEY



Energy Efficiency Training Event
January 8–9, 2013



TURKEY: INDUSTRIAL SECTOR



- Industry is Turkey's largest Energy Consumer (39% of total energy consumption)
- Industrial electricity consumption increased annually at 4.9% from 1999–2009
- Energy efficiency opportunities in industry are commercially attractive

WHY ENERGY EFFICIENCY IN TURKEY?

- Turkey's rapidly increasing energy needs (Primary energy consumption expected to grow to 5.7% annually to 2020)
- Expansive industrial sector (21.8% of GDP)
- Significant potential to improve energy efficiency in industrial sector
 - Savings potential conservatively estimated at 24%
 - Over 50% of industrial EE projects expected to have payback period of less than 2 years
- Economy would benefit from reduced demand for energy imports



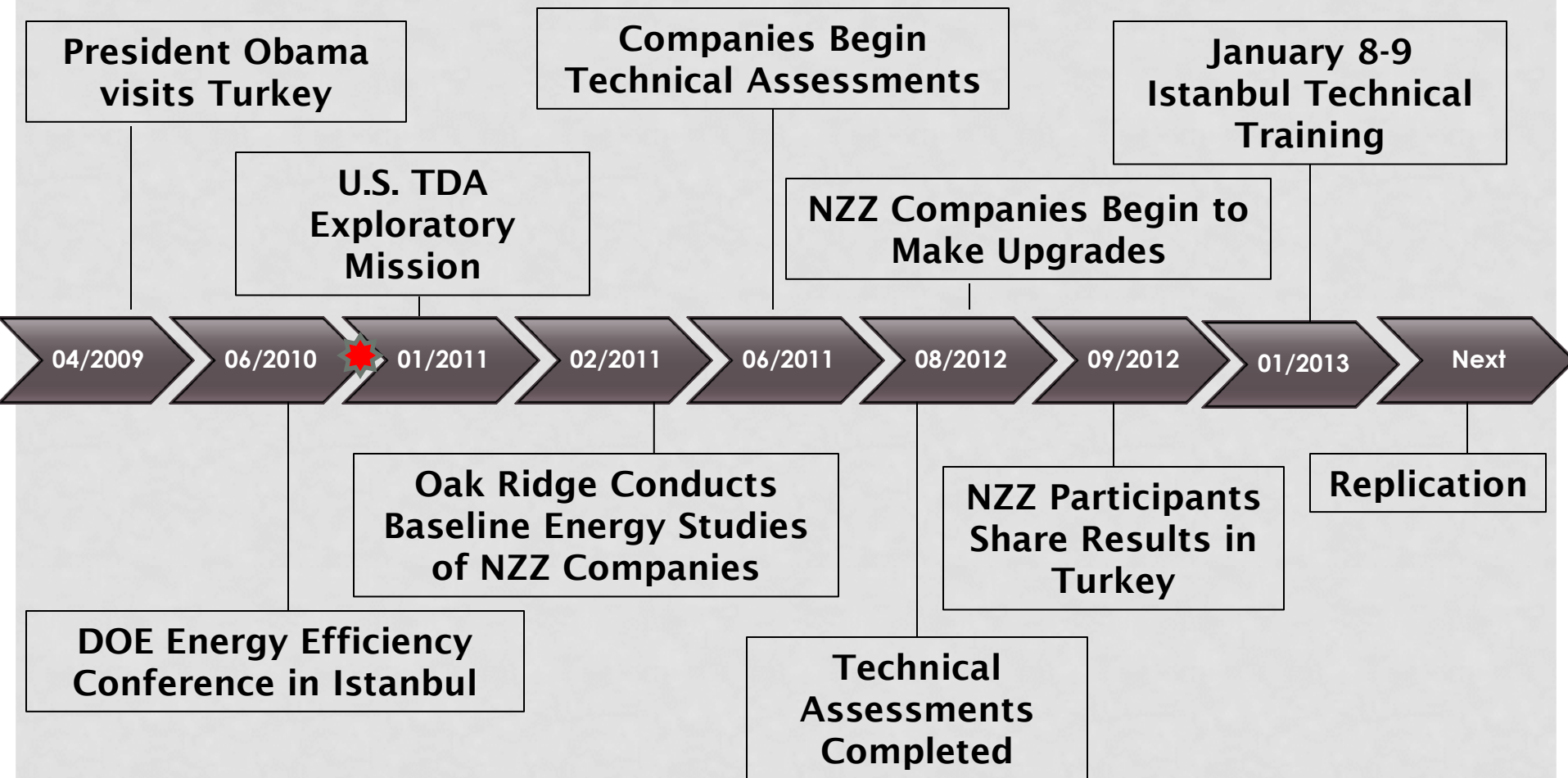
SEIZING THE MOMENT



Government of Turkey is Promoting Energy Efficiency to Bolster **Energy Security** by Reducing Reliance on Imports and Improve Economic Growth

- The Government of Turkey has drafted new legislation incentivizing industrial energy efficiency by offering grants, establishing guidelines for regular energy audits, setting criteria for companies, and more.
- Significant resources are flowing into Turkey to support efficiency projects.
 - EBRD/TURSEFF – \$260m Turkey Sustainable Energy Financial Facility with five Turkish partner banks
 - World Bank (CTF) – \$250m for renewable energy and EE
 - EX-IM & OPIC programs focused on Turkey

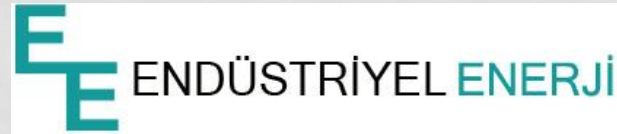
CHRONOLOGY of EVENTS



PARTNERS



AKBANK



Honeywell



LOCATION OF THE NEAR-ZERO ZONE PROJECT



NZZ COMPANY PARTICIPATION

Ataer
Bak Ambalaj
Baylan Ölçü
Cms
Denizciler Dökümcülük
Dirinler Döküm
Dost Cam
Ege Tekstil
Egeplast-Ege Plastik
Eltaş Trafo

Esen Plastik
Felda Iffco
İaosb Water Treatment
Koroza
Kroma Baskı
Maktek Alpel
Norm Civata
Özgün Boya
Polibak
Schneider Elektrik

ENERGY EFFICICENCY ASSESSMENTS

1. Facility Overview

- Facility Energy Usage
- Key Energy Systems

2. Industrial Processes Overview

3. Utilities Overview

4. Energy Cost Reduction Measures

- Objective
- Issues and Observations
- Recommendations
- Costs and Benefits
- Corollary Impacts and
- Potential Heat/Energy Surplus
- Implementation Cost

- Annual Energy Savings
- Annual Electricity Savings (kWh)
- Annual Natural Gas savings (therms)
- Annual Water Savings (kl)
- Demand Reduction (kW)
- CO₂ Emissions Reduction (metric tons)
- Internal Rate of Return (IRR)
- Net Present Value (NPV)
- Simple Payback Period
- Impact on Operations
- Complexity of Implementation
- Analysis and Strategy

5. Materials Pricing Guides

ENERGY AUDITS

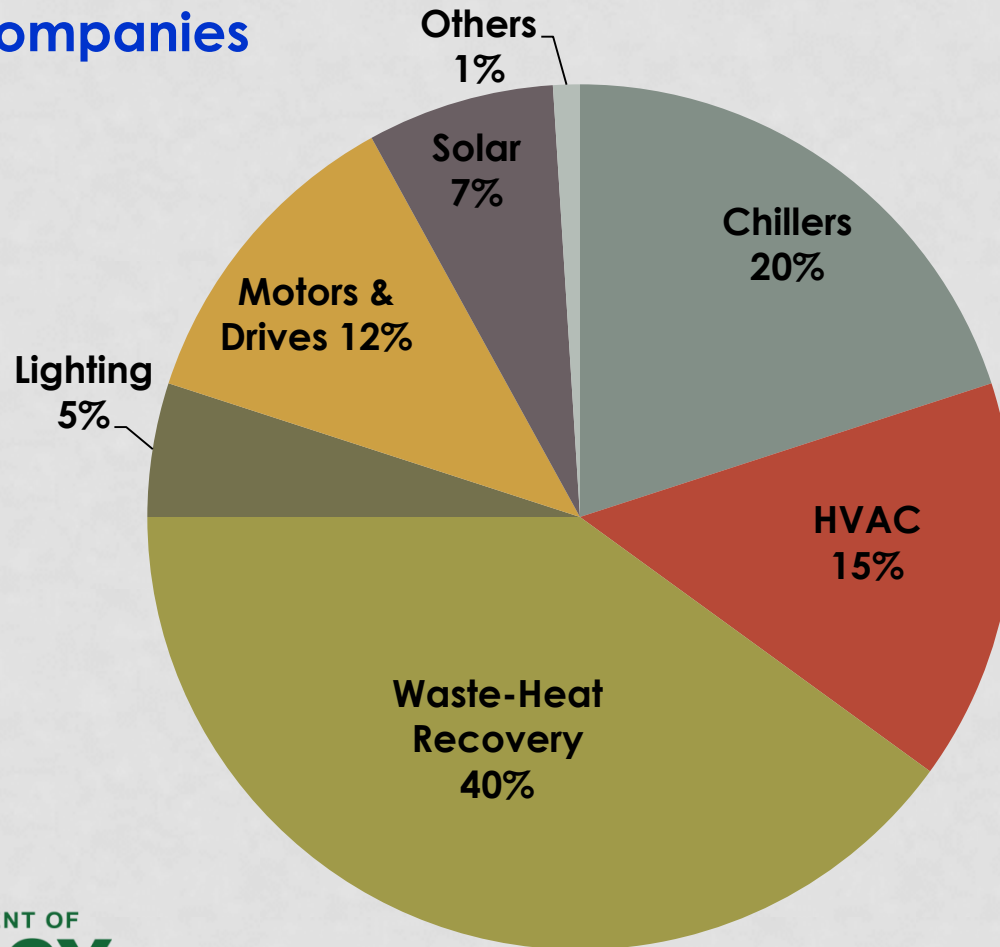
- Companies received reports with recommendations on how they could reduce energy and save money.
- Reports included cost of savings opportunities, expected payback period, etc.



- Recommendations were classified as short, medium, or long term depending on the number of months to get a return on the investment.

ENERGY EFFICIENCY RECOMMENDATIONS

20 IAOSB Companies



NZZ PROJECT RESULTS AND IMPACTS ON 20 IAOSB COMPANIES

- Estimated total of **\$6.1M/11M** Turkish Lira in annual energy cost savings
- Estimated total of **64 million kWh** in energy savings – on average **24%** of energy consumed
- Assessments of 20 companies revealed the average payback period was as low as **12 to 18 months**
- Average **IRR was 56%**
- Assessments identified cost-effective opportunities for companies to invest in cogeneration – **\$4M/7M Turkish Lira** savings with shared water resources
- Approx **\$250M/450M TL** in power generation equipment sales and **>\$16M/27M TL** in energy efficiency product and services

NZZ PROJECT IMPACTS ON TURKEY

271 Zones (Presently, 157 in operation) → 52,000 Companies

- If 10% of total companies implement similar cost saving measures, could save the equivalent of 17 billion kWh of electricity and reduce energy costs by \$1.6 billion per year.
- Turkey could build approx. 6 fewer coal-fired power plants and could import 6% less natural gas.
- Reduction in CO₂ emissions would have an impact similar to taking 1.7 million cars off the road.

NZZ PROJECT ACCOMPLISHMENTS

- **Win-Win for Turkish and US Private Sectors**
 - Turkish businesses increase profitability while reducing energy consumption
 - New business opportunities for Turkish and U.S. companies
- **Project Supported the Government of Turkey's Objectives to Promote Industrial Efficiency Across Turkey**
 - Increased public awareness about commercial and environmental benefits associated with industrial energy efficiency projects.
 - Concentrating resources on a single zone allowed the project to achieve greater impact and helped identify unexpected opportunities and create a replicable model for industry.

NZZ PROJECT BENEFITS

- The project has influenced public–private partnerships and cooperation that can spread industrial energy efficiency efforts across Turkey
- Project is inspiring the development of an energy service company market
- Creating more opportunities for more energy efficient manufacturing equipment and other products
- Project has shown that companies outside the industrial zones can also make energy efficient choices



Industrial Energy Efficiency
is a win-win: *Kazan, Kazan.*



THANK YOU