# Making Energy Efficiency Part of Corporate Culture

NISSAN

June 12, 2012



# Nissan Motor Company, Ltd.





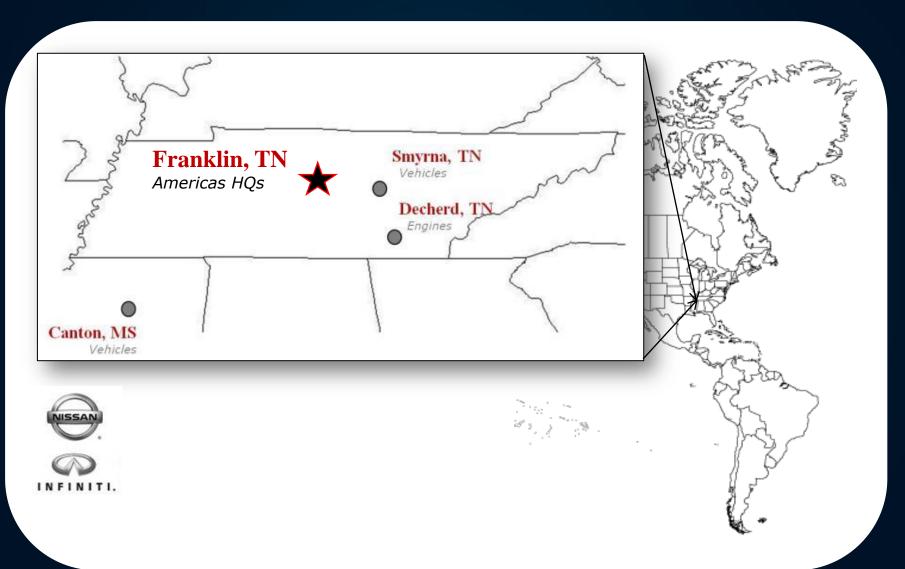
# Nissan U.S. Manufacturing Plants





# Nissan Americas Region Headquarters





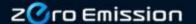
# Nissan Environmental Philosophy





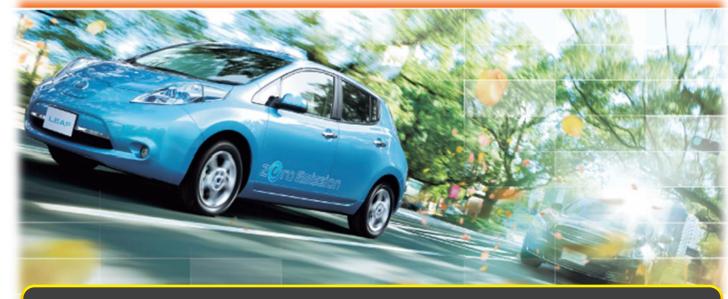
"For the future of our planet and generations to come, we are doing everything we can to help our natural environment, by reducing the environmental impact in real world terms and providing customers with innovative products that contribute to the development of a sustainable mobile society."

http://www.nissan-global.com



## Corporate Philosophy for Sustainability





"Guided by its corporate vision of Enriching People's Lives, Nissan aims to contribute to the sustainable development of society through its full range of global business activities in addition to providing value through its products and services."

Nissan: Enriching People's Lives

Sustainability Report 2011



# Nissan Green Program





# Nissan Green Program - CO2 Reduction







# O Cultivating the Corporate Environment



## Mindset

### 1. Cross-functional, Cross-cultural

Be open and show empathy towards different views; welcome diversity.

### 2. Transparent

Be clear, be simple, no vagueness, and no hiding.

### 3. Learner

Be passionate. Learn from every opportunity; create a learning company.

### 4. Frugal

Achieve maximum results with minimum resources.

## 5. Competitive

No complacency, focus on competition, and continuous benchmarking.

## Actions

### 1. Motivate

How are you energizing yourself and others?

### 2. Commit & Target

Are you accountable and are you stretching enough toward your potential?

### 3. Perform

Are you fully focused on delivering results?

### 4. Measure

How do you assess performance?

## 5. Challenge

How are you driving continuous and competitive progress across the company?



# © Executive Management Support







## **Cross-Functional Corporate Teams**



Energy Management

Operating Supplies

Repairs & Maintenance

Supply Chain Management

Compensation

Improve manufacturing competitiveness by:

- cost reduction
- reduced waste
- business synergies

Team leaders represent primary consumers!



Purchased Services

Travel & Office Supplies

Depreciation

Contract Maintenance

NPS Obsolescence



## Cross-Functional Energy Team



Manufacturing

Communications

Engineering

**Finance** 



Maintenance

Legal



Purchasing

Suppliers

Environmental





# © Energy Policy



### NISSAN

## **ENERGY POLICY**Nissan North America, Inc.

Consistent with the company's environmental philosophy: "Symbiosis of People, Vehicles and Nature" – our ideal for a sustainable mobile society, Nissan North America, Inc. is dedicated to the development of a comprehensive, measurable energy management program to reduce the energy burden, cost, and risk in the manufacturing of all of its products. Improving the energy efficiency of all operations demonstrates our confidence in the continued growth of Nissan and our unyielding commitment to an environmentally sustainable business.

The responsibility for energy management is shared equally by NNA management, all employees, and on-site Contractors/Suppliers working on behalf of NNA. Specifically, in support of Nissan's vision to be the most trusted, growing car company in the Americas, NNA is committed to:

- Continually improving energy performance;
- Achieving 25% energy intensity reduction in 10 years;
- Providing available information and necessary resources to meet energy use objectives and targets;
- Achieve and maintain compliance with applicable legal requirements, as well as with any other energy performance requirements to which we subscribe; and
- Supporting the purchase of energy efficient equipment and systems as appropriate for the company.

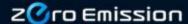
Approved by:

William J. Krueger

Wm J. Krueger

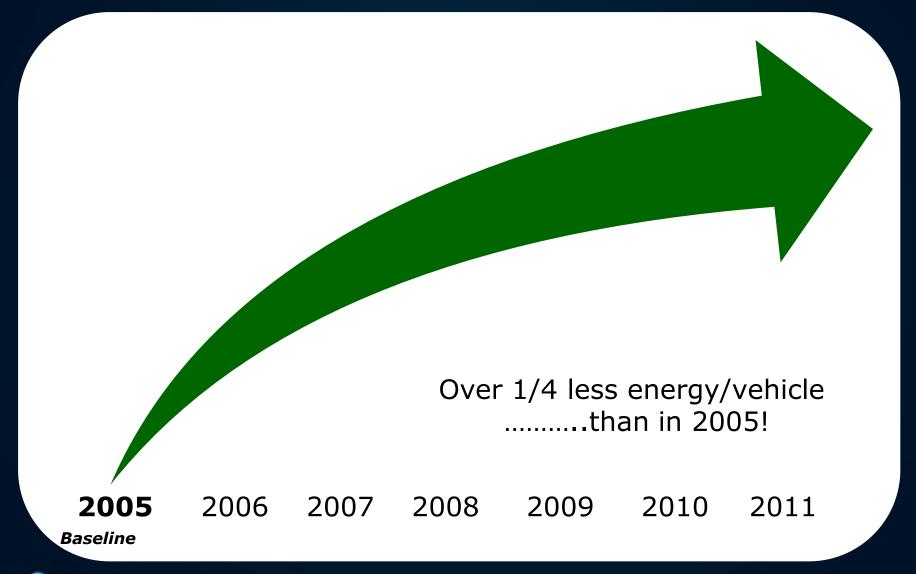
Nissan North America, Inc.

Vice Chairman, MC- Americas



# Manufacturing Energy Savings





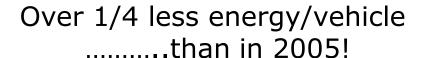
## Manufacturing Energy Savings



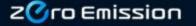
**Energy Savings to** 

~ drive a LEAF 830 million miles!





Baseline



## Manufacturing Energy Savings



**Energy Savings to** 

~ drive a LEAF 830 million miles!





Over 1/4 less energy/vehicle .....than in 2005!

2005 2006 2007 2008 2009 2010 2011

Baseline

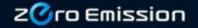


## **Government Resources**





®



# Oak Ridge National Lab



# **ORNL** is uniquely positioned to deliver science and technology for energy

### We have an extraordinary set of assets

- Outstanding tools for materials R&D including SNS and HFIR
- World-leading systems for open scientific computing
- BioEnergy Science Center
- Growing strength in climate change impact R&D
- The nation's broadest portfolio of energy programs
- Unique resources for nuclear technology
- Robust national security programs

Our mission:
Use these assets
to enable science
and technology
breakthroughs
that transform
our energy future





# © ENERGY STAR® Partner since 2006





2011 Motor Vehicle Focus Group



### Participating Organizations

BMW Manufacturing Company

Chrysler LLC\*

Ford Motor Company\*\*

General Motors Corporation\*\*

Honda of America Manufacturing

International Truck and Engine Corporation\*

Mitsubishi Motors North America

Nissan North America\*

Subaru of Indiana Automotive, Inc.\*

Toyota Motor Manufacturing North America\*\*



# Top 25% Energy Efficiency Ratings











**Franklin, TN** 2009/2010/2011

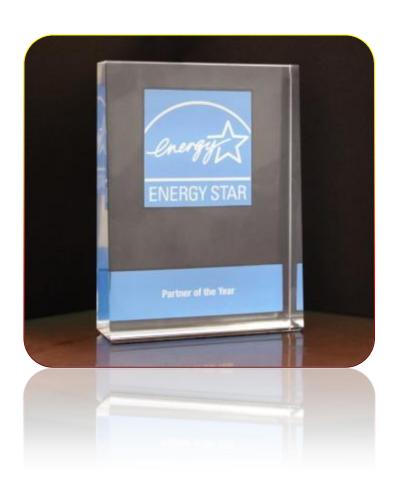


Canton, MS



## Partner of the Year Awards













# Better Plants Challenge Partner





### BETTER BUILDINGS BETTER PLANTS

Leading companies are working to improve their bottom line by saving energy in their manufacturing plants.

## NISSAN

**CHALLENGE PARTNERS & ALLIES REPRESENT** 

SQUARE FEET COMMITTED

\$2 BILLION

IN FINANCING THROUGH ALLIES

+300

MANUFACTURING FACILITIES

### BETTER BUILDINGS

- Ascension Health
- Best Buy
- CBRE
- Cleveland Clinic Foundation
- Forest City Enterprises
- Green Sports Alliance
- HEI Hotels & Resorts
- IHG (InterContinental) Hotels Group)
- Jones Lang LaSalle
- Kohl's Department Stores
- Lend Lease
- The PNC Financial Services Group
- Prologis
- RREEF Real Estate
- Shorenstein Properties, LLC
- = SUPERVALU
- **TIAA-CREF**
- Transwestern
- USAA Real Estate Company
- Walgreens Co.
- Wyndham Worldwide

- M Atlanta, GA
- Denver, CO
- The District of Columbia
- Los Angeles, CA
- = Sacramento, CA
- Seattle, WA
- State of lows. Department of Administrative Services
- State of Minnesota
- Allegheny College
- Delaware State University
- Douglas County School District NV
- Houston Independent School District, TX
- Kentucky Community and Technical College System
- Michigan State University
- Poudre School District.
- University of California,
- University of Hawaii at Manoa

### BETTER BUILDINGS, BETTER PLANTS

Leading companies are working to better their bottom line by saving energy in their manufacturing plants.

- m 3M
- Alcoa
- Briggs and Stratton
- Cummins Inc.
- GE
- Legrand
- Nissan North America Inc.
- Saint-Gobain Corporation
- Schneider Electric

# Industry

are reducing their energy intensity

### ALLIES

Organizations committed to helping reduce energy use through innovative energy efficiency products, services, technologies, and partnerships.

- Abundant Power
- = AFL-CIO
- Blue Hill Partners LLC
- Citi
- Energi Inc.
- GE Capital
- Green Campus Partners
- Metrus Energy
- Renewable Funding
- Serious Energy Inc.
- Southern California Edison
- Transcend Equity
- Ygrene Energy Fund





Energy Efficiency & Renewable Energy



# **Energy Management Guidelines**



## Guidelines for Energy Management



ISO 50001







# OISO 50001 Energy Management Standard



### CERTIFICATE Certificate Number: 561280.01

The Energy Management System of:

Nissan North America, Inc.

983 Nissan Drive Smyrna TN, 37167 USA

Including its implementation, meets the requirements of the standard:

## ISO 50001:2011

DEKRA

The scope of the NNA-S Energy Management System (EnMS) includes the manufacturing operations located at the Smyrna, Tennessee site. Gasoline and diesel fuel used for transportation, emergency backup generators and lab testing are excluded

This Certificate is valid until: This Certificate is valid as of:

H. House Soll H. Pierre Sallé President DEKRA Certification. Inc.

The method of operation for energy certification is defined in the DEKRA EnMS Certification Services to ISO 50001 Requirements. Integral publication of this certificate is allowed.

DEKRA Certification, Inc. 4377 County Line Road Challont PA 18914 /215/997-4519

Accredited By:



Win the energy challenge with ISO 50001

ISO 50001- Energy Management System Standard establishes a framework for industrial and commercial facilities and organizations to manage energy.

### Potential impacts:

· Could influence up to 60% of the world's energy use across many economic sectors

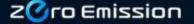
Uptake of ISO 50001 will be driven by companies seeking an internationally recognized response to:

- Corporate sustainability programs
- Energy cost reduction initiatives
- · Demand created along the manufacturing supply chain
- · Future national cap and trade programs; carbon or energy taxes; increasing market value of "green manufacturing" / reduced carbon footprint
- International climate agreements



### Status of ISO 50001

- Developed by ISO Project Committee 242: United States and Brazil lead effort with United Kingdom and
- · 56 countries involved in development
- Published June 15, 2011
- ISO PC 242 transitioned to TC 242, developing standards and guidance related to implementation of ISO 50001



# **Energy Assessments & Audits**



- > energy patrol or blitz
- > daily tech check sheet
- > 3-5 day joint assessments







# Recognizing Accomplishments











# O Communicating the Program



### Intranet



### Internal TV Network



### Newsletter



### Awareness Sessions





## **Awareness Communications**





What everyone should know about our ISO 50001 Energy Management System (EnMS):



How can you share your ideas and suggestions?

- > Inform your supervisor
- > Email to: NissanEnergyTeam@Nissan-USA.com

Success depends on YOU!



Report concerns (including air leaks) using telephone extension 6-3535



Report concerns (including air leaks) using te



- ✓ reduce WASTE
- √ conserve ENERGY and
- ✓ protect the ENVIRONMENT

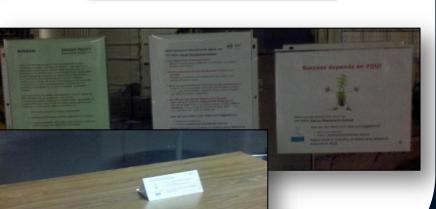
...by turning this item OFF ....when not in use







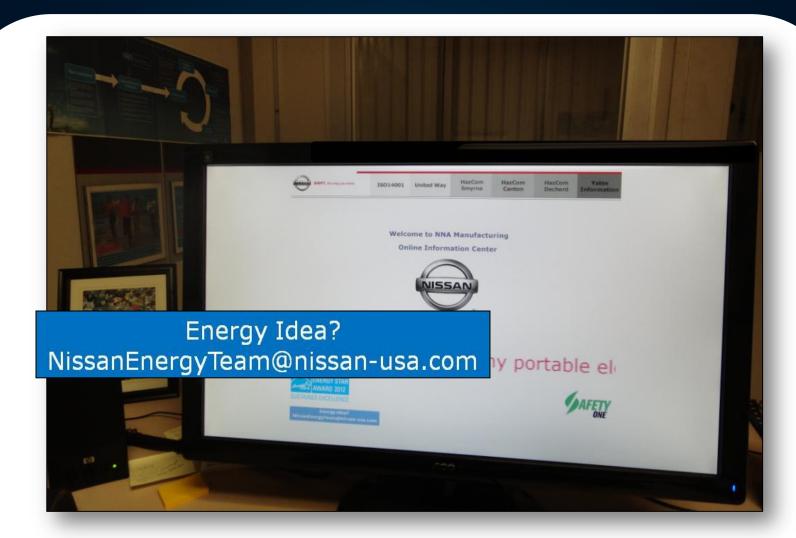
Please continue to recycle this paper!





# Awareness Communications



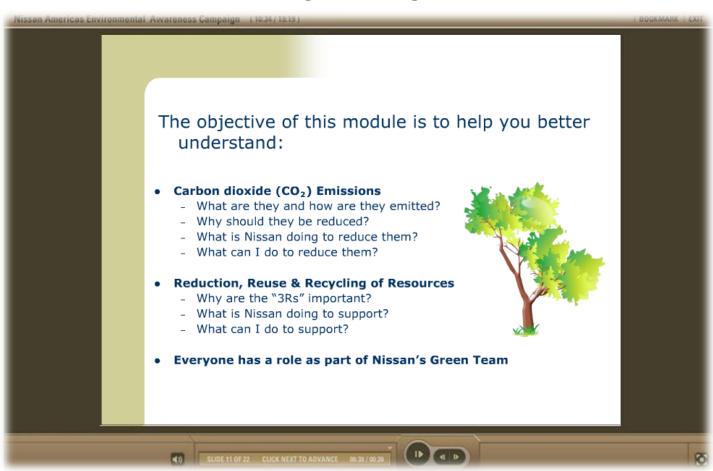




# Awareness Training



## e-Learning Training Module





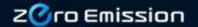
# Visitor Awareness











# © Employee Fair Engagement











# Family Day Engagement















# © Engaging Home Energy Efficiency





## **Top Pledge Drivers**

# Congratulations to the 2011-2012 Change the World, Start with ENERGY STAR Campaign Top Pledge Drivers

By encouraging their audiences to take small, energysaving steps that make a big difference, these organizations have helped all of us save energy, money, and the environment.

### NISSAN

Results for Change the World Campaign 2011-2012

Greenhouse Gas Emissions (lbs.)	51,681,307
Dollars	\$4,118,682
kWh	28,780,694
BTUs	63,267,577,869

### Overall Top 5 All Sectors

COMPANY

(lbs of Greenhouse Gases saved)

Georgia Power Company

216,613,562

Girl Scouts of the USA

155,057,562

Samsung Electronics

114,674,361

Ameren Illinois

60.796.670

Nissan North America

51,681,307

### **Business**

COMPANY

(Ibs of Greenhouse Gases saved)

Samsung Electronics

114,674,361

Nissan North America

51,681,307

Boeing St. Louis

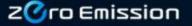
38,657,162

Eastman Chemical Company

16,130,251

Sears Holdings Corp

11,778,348



## **Measurement & Verification**





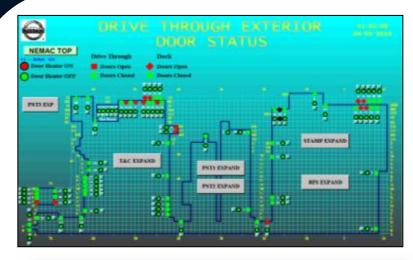
- Intranet-based system
- Customized for Nissan Processes
- Built in-house by Nissan Engineering

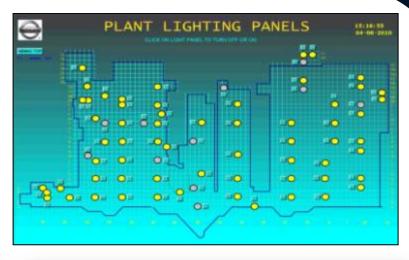
"If you can measure it, you can manage it!"

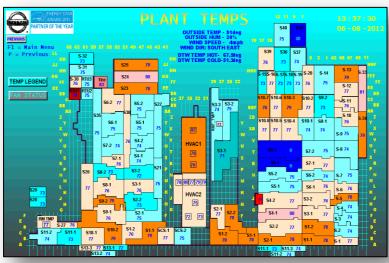


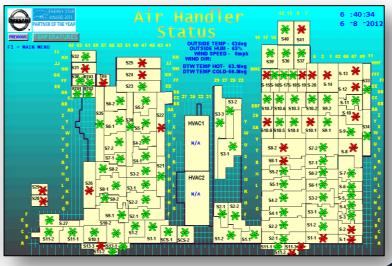
# O Data Driven Decisions













## O Low Cost Improvements



Onsite personnel check for abnormal conditions to prevent unplanned consumption

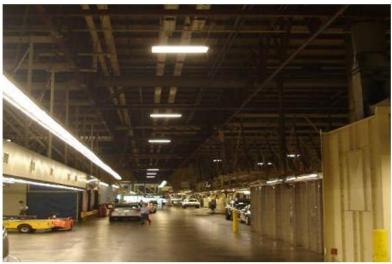




# O Lighting Upgrade Project







- 400-watt fixtures replaced by 175/250-watt efficient fluorescents
- Timers replace switches
- Reduced lumens where not needed, effective/efficient lumens when and where needed
- Automation cell task lights switch on when doors are opened
- On/off times of all lighting are tracked





### Compressed Air Leak Repair Program

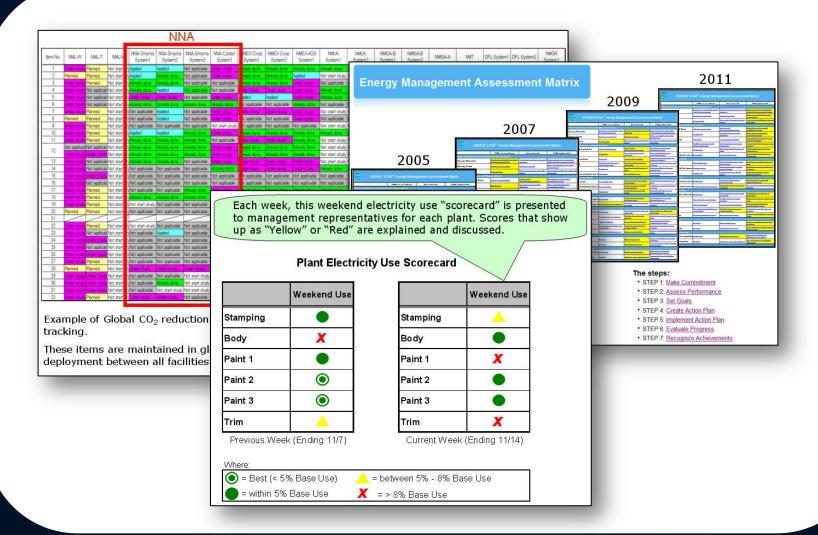


FY11" Canton Air Leak Cost Avoidance"							
FY11 Year to Date	527	739	\$58,298	516	721	\$56,863	98%
Month	Number of Leaks Identified	Leaks Identified (CFM)	Identified leaks Cost Avoidance	Number of Leaks Repaired	Leaks Repaired (CFM)	Repaired Leaks Cost Avoidance	% Complete
April	61	84	\$6,623	61	84	\$6,623	100%
May	7	10	\$773	7	10	\$773	100%
June	63	88	\$6,954	63	88	\$6,954	100%
July	104	148	\$11,700	100	140	\$11,038	94%
August	100	140	\$11,038	93	130	\$10,265	93%
September	78	109	\$8,609	78	109	\$8,609	100%
October	56	79	\$6,201	56	79	\$6,201	100%
November	55	77	\$6,071	55	77	\$6,071	100%
December	3	4	\$331	3	4	\$331	100%
January	<b></b>	<b></b>	50	<b></b>		5300 5300	
February	<b>\$</b>	₩ ₩	50	<b>\$</b>	en W	5500 5500	



# Internal Benchmarking







### O Americas Energy & Sustainability Summit





# © External Benchmarking

















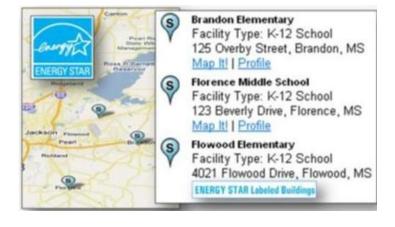




### O Community Relations & Citizenship











# © Electric Vehicle Charging Stations











## New Smyrna Battery Plant









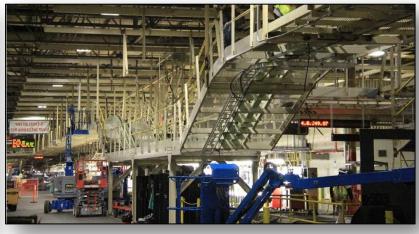
### **Energy Efficiency by Design:**

- Translucent wall panels with day lighting
- > White roof
- > VFDs & energy efficient motors
- Utilities metering and expansion capability
- > Condensate recovery for tower make-up
- > Solar EV charging stations

## New Smyrna Paint Plant



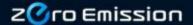






### **Energy Efficiency by Design:**

- > 30% energy intensity reduction
- > 75% recycled booth air
- > VFDs & energy efficient motors
- > Utilities metering and expansion capability
- > Optimized processes to increase efficiency
- > Reduced environmental impact
- > Condensate recovery system
- > White roof



### Sustainable Construction





**Energy Checklists** 



**Recycling Targets** 



**Recycling Containers** 



Pledge for New Hires



**Recycling Survey** 



**Metered Utilities** 

