

# JACOBS®



## 2012 SUSTAINABILITY REPORT

We See Sustainability Differently

# EXECUTIVE LETTER

We are pleased to share our 2012 *Sustainability Report* with our clients, colleagues, and employees. While much of this year's report is consistent with our 2011 report, we have even more to share with you today. More than ever before, Jacobs employees are embracing the way We See Sustainability Differently, using the lens of our core values to help our clients find the best sustainable solutions for their projects around the world.

Our core values — People Are Our Greatest Asset; We Are Relationship-based; and Growth is an Imperative — are the foundation that supports our leadership, culture, and business practices. They guide our commitment to an ethical, relationship-based, and cost-conscious business — a sustainable business.

In the past year we've made advances not only in the sustainable services we provide for our clients, but also in the sustainable practices within our own company. Around the world, across all disciplines, we work to constantly demonstrate our commitment to sustainability through our words and actions. That commitment is reflected every day through our low-cost posture, our BeyondZero® safety philosophy, and our adherence to our Seven Principles of Sustainability.

Our low-cost posture — which comes in part from operating a sustainable business — results in savings that benefit clients and shareholders. Timely and efficient engineering services and effective, tailored sustainable solutions are the best way we can save our clients money and make their businesses successful. These sustainable solutions that allow our clients to achieve their project goals are a key aspect of the creation of an enduring sustainable legacy.



Colin Edwards  
Senior Vice President, Quality and Safety



Craig L. Martin  
President & Chief Executive Officer

We again utilize the Global Reporting Initiative (GRI) sustainability reporting framework to ensure the authenticity and consistency of our reporting. The framework also serves as a basis through which we re-articulate our philosophy on sustainability, and relate it to tangible metrics. From case studies, sustainable processes and tools that support our clients, to a variety of project examples, our 2012 report illustrates our ongoing commitment to the advancement of safe and sustainable services for our clients and within our own company.

As you read this report, we invite you to reflect on not only the highlights and achievements of the last year, but also the possibilities for the future. As we move forward, always looking at sustainability through the lens of our core values, our opportunities are endless. Applying the best, most efficient and effective sustainable solutions for our clients worldwide, in all major industries in which we operate, allows us to make a significant contribution to a safe and sustainable future. *We See Sustainability Differently.*



# BY THE NUMBERS

## SERVICES

LEED-ACCREDITED  
PROFESSIONALS

621

(At publication)

BREEAM/CEEQUAL  
-CERTIFIED  
PROFESSIONALS

21

(At publication)

REVENUE FROM SUSTAINABLE PROJECTS

FY2011 Revenue from LEED Registered/Certified, BREEAM Certified, Estidama Certified

\$133 million

(Revenue includes full services, including sustainable services, provided for clients' qualifying projects)

JacobsValue+  
\$3.7 billion

For FY2011

CLIENT SATISFACTION SURVEY SCORES FOR 2011

91%

## RANKINGS

No. 2

FORTUNE MAGAZINE

Jacobs ranked No. 2 in the "Engineering & Construction" category of *FORTUNE Magazine's* 2012 World's Most Admired Companies list, up from last year's No. 3. With the exception of 2007, we have held a top-3 spot on this ranking for 14 years — something unachieved by any others ranked in our category.

No. 94

NEWSWEEK MAGAZINE

Jacobs ranked No. 94 out of the Top 500 companies in the United States, in *Newsweek Magazine's* 2011 Green Rankings. The No. 94 ranking is up from last year's No. 133, and places Jacobs in the Top 100 for the first time.

No. 11

Jacobs ranked No. 11 in the "Capital Goods" category this year in *Newsweek Magazine's* 2011 Green Rankings.

No. 7

ENGINEERING NEWS-RECORD

Jacobs ranked No. 7 out of the Top 100 Green Design Firms in *Engineering News-Record's* 2012 Sustainability Survey.

No. 5

In the same survey, we ranked No. 5 in the Government sector.

## INTERNAL

SAFE HOURS WORKED BY ZERO ACCIDENT AWARD  
WINNING SITES & OFFICES

62.3 million

(Achieved by our Zero Accident Award Winners)

PAGES OF PAPER SAVED THROUGH OUR PRINT REDUCTION PROGRAM

33 million

(Equivalent to 66,000 reams/165 tons/3,960 trees)

CHARITABLE DONATIONS MADE TO THE UNITED WAY,  
AMERICA'S CHARITIES & GLOBAL IMPACT

\$1.1 million

Jacobs® is one of the world's largest and most diverse providers of technical, professional, and construction services, including all aspects of architecture, engineering, and construction, operations and maintenance, as well as scientific and specialty consulting.

We serve a broad range of companies and organizations, including industrial, commercial, and government clients across multiple markets and geographies. Our global network includes more than 170 offices in more than 25 countries, with operations in North America, South America, Europe, the Middle East, India, Australia, Africa, and Asia. We were founded in 1947, and our headquarters is in Pasadena, California.



**'Our sustainable business approach is inextricably linked to our value enhancement services. Our delivery team ensures that affordable and sustainable options are considered, evaluated, and implemented in the work process, thereby providing real business value to our clients.'**

Ashish  
Jacobs, Finance Director  
Abu Dhabi, United Arab Emirates

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### *Our Philosophy*

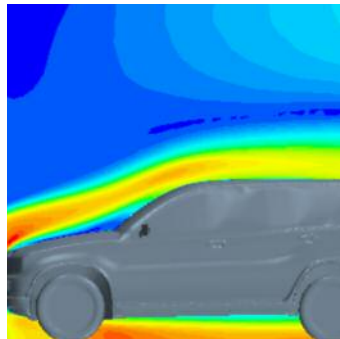
We See Sustainability Differently. As seen through the lens of our core values, sustainability permeates our culture.



## SECTION 2 9

### *Client Features*

Take an in-depth look at the ways our clients have achieved success in meeting their sustainable project goals.



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### *Our Processes & Tools*

Our processes and tools help us deliver to our clients tangible, technical solutions that make an impact on their social, economic, and environmental goals.



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### *Project Gallery*

We are dedicated to exceeding client expectations. Our project profiles illustrate the way our sustainable services cross all market sectors and geographies.




## SECTION 5 45


### *Sustainability In Our World*


We constantly strive to improve sustainability within our company while making a positive impact in the communities where we live and work.

#### SYMBOLS REPRESENTING SUSTAINABLE ELEMENTS

We use the following symbols to represent sustainable attributes of various projects and initiatives:

 Carbon savings/reduction

 Water savings/reduction

 Cost savings/reduction

 Social/Community benefits

 Energy savings/reduction

 Materials savings/reduction

 Environmental benefits

 Certified/Recognized/Award-winning

# We See Sustainability Differently

**W**e look at sustainability through the lens of our  
core values: People Are Our Greatest Asset;  
We Are Relationship-based; Growth is an Imperative.

Our core values drive our leadership, business practices, and culture.

They help us stay the course and run an ethical, relationship-based,  
and cost-conscious business — a sustainable business.

# Our Philosophy

Jacobs® is committed to continuous improvement, helping solve our clients' toughest challenges, and creating a brighter future for our employees, their families, and their communities.



Our investment in sustainable development grows from this foundation and is upheld by our core values, which in turn enforce our commitment to a sustainable, safe, and ethical workplace.

Sustainable development is the delivery of competitively priced goods and services that satisfy human needs and add to quality of life. Ecological impacts and resource intensity are progressively and cost-effectively reduced

throughout the life cycle of those goods and services, thereby ensuring future generations' ability to do the same. At Jacobs we reinforce this encompassing definition of sustainable development with a solid foundation: our core values. Our core values allow us to see sustainability differently, ensuring that our commitment to sustainable development crosses regions, cultures, departments, and disciplines; and permeates all that we do.

### *We See Sustainability Differently*

The following illustrates the connection between our philosophy, our core values, and the principles of sustainability that help guide us. While these facets keep us grounded and steadfast in our mission, we are guided and engaged by much more: our clients, our employees, our board of directors, and our unwavering commitment to run a diverse and ethical business. As you explore the various sections of this report, learn about the elements that make up our approach to sustainable leadership, and observe them put into action through our business and our employees, it becomes clear that at Jacobs...

**We see sustainability differently.**



**'By understanding our clients' project drivers, we develop dynamic design approaches which provide cost-effective, sustainable solutions resulting in project success and repeat business.'**

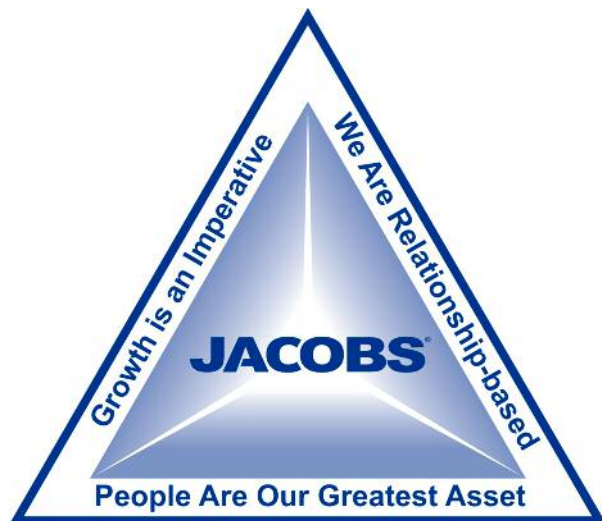
Laura  
Jacobs,  
Manager Civil-Structure-Architecture  
Conshohocken, Pennsylvania, USA

# OUR PHILOSOPHY

## *Core Values: Tenets of Sustainable Development*

At Jacobs, we understand that the ability to sustain requires a solid foundation. It is no coincidence that our core values — People Are Our Greatest Asset, We Are Relationship-based, Growth is an Imperative — align so well with the core drivers of sustainability.

Our core values, like the core tenets of sustainable development, are inextricably linked. Each balances the others, for a cohesive whole. That balance among our core values provides the framework that allows us to meet our clients' sustainable project goals, enhances our internal sustainable practices, and supports our ability to grow as a company. At Jacobs, sustainable development is evident across all market sectors of our business and is woven into the fabric of our culture. It's part of who we are.



## *People Are Our Greatest Asset*

The human side of our company — our people — is our most valued asset, which is why we focus so strongly on safety for all our employees, partners, and clients. As engineers, architects, scientists, planners, builders, and more, our people are the foundation for our commitment to sustainable development. Our people are experts, and the force in bringing the best business results to our clients. This means they are skilled and experienced in the delivery of sustainable development and design, and related services. We come from diverse backgrounds, speak various languages, and live in geographies around the world. We are residents of Los Angeles, Milan, Singapore, Mumbai, and beyond, and yet we work without boundaries. This diversity strengthens our ability to offer innovative and sustainable solutions all over the world for both our clients and our communities. It is ultimately our people who help make our collective environments a safer, more efficient, and more sustainable place to live.



# OUR PHILOSOPHY

## ***We Are Relationship-based***

The way we interact with others and our surroundings is paramount. Jacobs is committed to building deep, lasting relationships with our clients. We are dedicated to making meaningful, long-term improvements to the sustainability of our world on behalf of our clients. This is one of the most rewarding aspects of our work, and where we make our biggest contribution to sustainability. We deliver the tangible, technical solutions that really make a difference to our clients' social, economic, and environmental goals, resulting in a solid triple bottom line.

## ***Growth is an Imperative***

We are driven to excel. At Jacobs we have a responsibility to our investors, our clients, and our employees to grow our profit by 15 percent on average year after year — every year. Our passion for sustainable development helps us keep that promise. Taking sustainable actions within our company, such as reducing consumption and improving efficiency, directly results in lowering costs and increasing profitability. Having such laser focus on our own costs allows us to offer competitively priced services. Better yet, our cost consciousness is embedded in our operational standards and extends to our commitment to always look for opportunities to save money for our clients, too.

## ***Seven Principles of Sustainability***

Jacobs is a company that is authentic in all that we do, and we do not take commitment lightly. Therefore, it is natural for us to create guidelines to assist us in our ongoing pursuit of sustainable development. With our core values as the foundation, these seven principles illustrate the way sustainability is woven into the fabric of our company.

**'We focus on the overall efficiencies we can help clients achieve in relation to their whole life cycle costs and operating costs.'**

Chris  
Jacobs, Inside Sales Manager  
Glasgow, Scotland, United Kingdom



## ***BeyondZero®***

Safety is a top priority at Jacobs. It's more than a policy manual or list of do's and don'ts. BeyondZero® is an internal program that promotes a Culture of Caring at Jacobs.

BeyondZero® goes beyond an incident-and injury-free workplace, and encourages all employees to think about the ways we can put the health and safety of our employees first in everything we do. After all, People Are Our Greatest Asset, so ensuring their safekeeping makes perfect sense. As part of our BeyondZero® program, our employees participate in formal safety-related committees. As individuals, we are committed to making safety a personal value and taking responsibility for ensuring no one is injured on or off the job — including our colleagues, families, and friends. ■



# Client Features

Our sustainable principles and practices are designed to help clients achieve success by improving their businesses.



**CITY OF AUSTIN**



**KINGDOM OF SAUDI ARABIA**



**TRANSPORT SCOTLAND**



**NASA**



**CHIESI FARMACEUTICI**



**HISTORICAL SUSTAINABILITY**



**DATA CENTERS**



**BRITISH ARMY**

## City of Austin ready to compete boardwalk dream with Jacobs as guide



### SUSTAINABILITY PLATFORM

To help keep sustainability at the forefront of the project, we used the American Society of Landscape Architects' Sustainable Sites Initiative (SITES) guidelines as a reference for The Boardwalk Trail at Lady Bird Lake in Austin, Texas, USA.

Up to 15,000 people walk, run, or bike along Lady Bird Lake in Austin, Texas, USA, every day. Yet trail users face an obstacle: a more than one mile detour. The trail runs along both sides of the lake and is connected by several bridges, but it's impossible to jog a complete loop without leaving the trail for narrow sidewalks along busy roads.

The dream of a unified trail system is about to be realized with the construction of The Boardwalk Trail at Lady Bird Lake. The planned trail improvements, not only complete the 10-mile loop around the urban lake, but also help preserve and enhance the lakeshore environment.

### *A Lake with History*

Lady Bird Lake began life in 1960 as a water reservoir and remained an unimproved and polluted eyesore for more than a decade. But in 1971 former first lady Lady Bird Johnson, along with other civic leaders, led an initiative to clean and beautify the lake. Scenic corridors combining trails and landscaping were constructed on both sides of the lake and achieved immediate popularity, despite several missing segments.

Over the next 40 years, the City of Austin considered completing the entire trail loop, but improvements progressed intermittently as city resources were available. In 2006/2007 The Trail Foundation, a local Austin group, funded an investment and feasibility study. This effort helped breathe renewed life into the project, and in 2008 the city made The Boardwalk Trail a priority.

### *Bridge to Reality*

The city turned to Jacobs for help with programming, public outreach, permitting, design, and engineering, counting on Jacobs' expertise with innovative park projects and with sustainable design, since a new goal was taking shape: to make the trail as green as possible.

The Austin-based Lady Bird Johnson Wildflower Center had begun work with the American Society of Landscape Architects and the United States Botanic Garden to create a certification process for sustainable sites. The program is intended as a site-based companion to the U.S. Green Building Council's LEED system, promoting sustainable land development and management practices. The three organizations formed the Sustainable Sites Initiative (known as SITES) and went to work crafting a ratings system.

### *Testbed for Sustainability*

Jacobs and the City of Austin saw the benefit of SITES and decided to use it as a reference for the Boardwalk. Although the project wasn't officially part of the SITES pilot program, throughout the process the Jacobs team considered the concepts from the ratings system and the environmental benefits it prioritized. Those those sustainable site priorities were incorporated into the Boardwalk design.

Take, for example, some of the ways the team addressed Sustainable SITES prerequisites:

### ■ ***Plan for Sustainability from the Beginning***

The main focus of trail development was life-cycle longevity. Primary materials of boardwalk sections of the trail include concrete, galvanized steel, decomposed granite from local quarries, and local limestone, all of which have recycled content or are locally available. Lighting was another vital consideration. The elevated sections of the trail, encompassing roughly two-thirds of the project, have lighting in the handrail. Originally designed to be fluorescent, the lighting plan was revised late in the project to use LED lighting, which has a longer life and uses less energy.

### ■ ***Protect & Restore Processes & Systems Associated***

with a Site's Hydrology On the land portions of the trail, particular attention was paid to nearby wetlands to maintain water inflow. Designers developed new trail cross sections of permeable trail for the woodland environment to help manage runoff in key areas.

### ■ ***Protect & Restore Processes & Systems Associated***

with a Site's Soil & Vegetation Biologists studied trail vegetation and identified native trees and plants that should be preserved, as well as invasive species that could be removed in the future. Revegetation is taking place in accordance with the City of Austin's native planting guides.

### ■ ***Minimize Effects of Construction-Related Activities***

Project designers, City of Austin staff, and local citizens including The Trail Foundation shared ideas to minimize the project's impact in sensitive wetland areas. Accordingly, most of the boardwalk deck is to be manufactured off site, limiting the



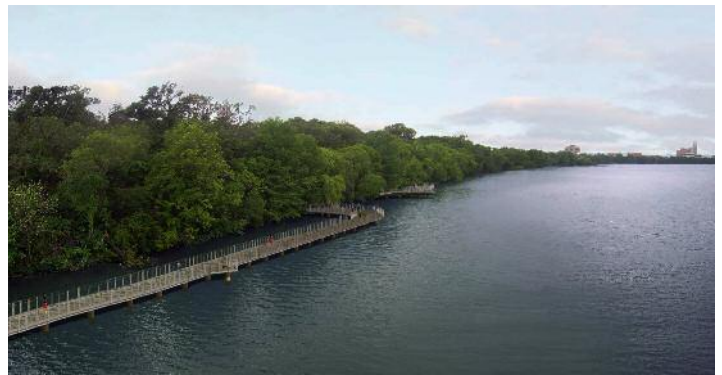
amount of environmentally disruptive construction over the lake. In addition, the design includes extraordinary measures for access and construction in sensitive wetland environments.

■ ***Build Strong Communities & Sense of Stewardship***

The Trail Foundation led extensive citizen participation efforts during design development of the Boardwalk Trail. They continue to serve as leading Trail advocates, spearheading maintenance, construction, and funding efforts, including raising \$3 million in private funds for construction.

***Happy Trails in 2013***

Construction on The Boardwalk Trail at Lady Bird Lake is planned to begin in the fall of 2012 and should be ready for pedestrians in about 18 months. Austinites can take to the trail as they have for years, this time making a complete circle around their favorite urban waterway—and enjoying a trail designed with sustainability as its top priority. ■



## Saudi Arabia energizes efficiencies with Jacobs



### KINGDOM-CRITICAL STRATEGY

Saudi Arabia recently set energy efficiency as a top priority for the Kingdom to preserve as much oil for export as possible. We're helping the kingdom achieve its goals through setting strategy, evaluating facilities, and unlocking its potential to create a diversified, sustainable economy.

Saudi Arabia sits atop some of the world's greatest reserves of oil, so the country has felt little pressure to focus on energy efficiency. But today the Kingdom is seeking to improve efficiency not despite its oil resources, but because of them. Energy saved within the country means more oil product available for export, and more gas available as valuable industry feedstock.

Jacobs is there to help. Experts are at work on initiatives to implement energy efficient technologies and develop conservation policies. Through savvy planning and targeted investment, the Kingdom could become one of the smartest users of energy in the region while creating jobs and getting the maximum value from its resources.

### *Plentiful Oil Undermined Efficiency in the Past*

Saudi Arabia has kept electricity rates low for decades by drawing on its vast reserves and subsidizing energy prices. Therefore, Saudis have had little financial incentive to improve the efficiency of their buildings and industrial processes. Meanwhile, the population of the Kingdom has grown and the economy has

boomed. As a result, today the average increase in electricity demand per year is eight percent, and energy consumption per capita is four times higher than the world average. To meet demand projections, the Kingdom would need to significantly expand its generating capacity as well as tap more and more of its own oil and gas resources. Saudi leaders are well aware that every unit of oil and gas consumed within the country for power generation is feedstock unavailable for value creation and export.

### *Key for the Kingdom*

As a result, Saudi Arabia has identified efficiency as a key national priority and created the Saudi Energy Efficiency Centre at the King Abdulaziz City for Science and Technology to manage the Kingdom's energy demands. One of the Centre's first steps was to organize the Saudi Energy Efficiency Workshop, a gathering of sustainability experts from around the world. Jacobs senior consultant Ian Moore was among the presenters and spoke on improving energy efficiency in the petrochemicals industry.

Moore looked at measures to decrease waste, such as investing in more efficient equipment, and he drew upon recent projects he had

completed for Saudi Aramco, the national oil company of the Kingdom, that focused on energy benchmarking. “Benchmarking allows Saudi Aramco to identify the gap between where they are now and where they want to be in the future,” says Moore.

### *Multi-faceted Approach*

Other Jacobs experts have also contributed to sustainability projects. George Bourassa, national director for commissioning services, was part of a team that recently completed a study for Saudi Aramco on improving energy efficiency in new and existing non-industrial buildings. Jacobs evaluated various elements, including energy efficient design and construction practices, applicability of green building codes and certification programs, and energy efficiency awareness, to be incorporated in a comprehensive approach to implementing an energy conservation initiative throughout the Kingdom.

“Through detailed energy modeling of existing typical Saudi building types, we were able to assess potential savings in energy consumption related to the performance of building envelope construction”, says Bourassa. “The results of implementing conservation initiatives that have proven effective in similar climates resulted in a significant reduction in both electrical capacity demand and consumption. This reduction in turn generates impressive reduction in demand

for new electrical generation capacity, overall consumption of electricity, and the utilization of oil reserves for electricity generation within the Kingdom.”

### *Igniting a Future Sustainable Economy*

Carlos Haddad, the lead architect on the energy study, is impressed with the Kingdom’s focus and efforts towards energy efficiency. “I worked in the construction industry in Saudi for eight years between 1998–2006,” Haddad says. “At that time, energy efficiency was not a consideration and many contractors and consultants were not aware of such a need. The current effort toward building code implementation that would mandate the use of efficient materials and design practices is a major step in the right direction for Saudi Arabia.”

Greg Kight, Jacobs’ national director for sustainable design and part of the energy study team, concurs. Kight believes a focus on energy efficiency could ultimately help the Kingdom diversify its economy. “New building rating systems and third party certification programs create demand for training and auditing,” he says. “The Kingdom would need experts in green building planning, design, technology, facility management, and so on. There’s a real opportunity to create jobs around a green industry.”

Increasing sustainability won’t happen overnight, but Saudi Arabia is setting aggressive goals. For example, the Kingdom recently announced a plan to get 10 percent of its electricity from solar power by 2020; the desert climate certainly provides plenty of sunlight. One Saudi Aramco leader predicted the kingdom could ultimately export as much solar energy as oil.

### *Holistic Sustainability*

“With its energy efficiency initiatives, Saudi Arabia can address all three components of sustainability: economic growth, social progress, and environmental stewardship,” says Moore. “These early projects are major stepping stones for Saudi Arabia.” ■

**‘The results of implementing conservation initiatives that have proven effective in similar climates resulted in a significant reduction in both electrical capacity demand and consumption. This reduction in turn generates impressive reduction in demand for new electrical generation capacity, overall consumption of electricity, and the utilization of oil reserves for electricity generation within the Kingdom.’**

George Bourassa  
Director for Commissioning Services  
Jacobs

## Transport Scotland takes preventative stance on climate change, asks Jacobs to map vulnerabilities



### FORECASTING THE ROAD AHEAD

Transport Scotland operates a road system in some of Europe's wettest environments. With climate change studies predicting even more rain, we're helping Transport Scotland assess the road system's vulnerabilities and make smart preparations for the future to keep the system at top speed.

Scotland has a well-earned reputation as a very scenic country but also one which can be rainy, cloudy, and generally damp. Some areas rank among the wettest spots in Europe: the Western Highlands receive average annual rainfall up to 4,000 mm (160 inches). Throughout the entire country, only 25 percent of days are sunny.

The Scots are used to their weather, but climate change could make the situation worse. Current long-range models predict a significant increase in seasonal rainfall over the next century. By the 2080s, the current 100-year river flood could become a 40-year event.

Scotland will therefore need resilient roads able to withstand the water. The design of embankments, bridges, and road surfaces are affected by weather conditions. Therefore, to prevent the country from being adversely affected due to more frequent floods and landslides, the Scottish road network needs to change along with the climate.

### *Planning for a Rainy Day*

Transport Scotland, the national transport agency, knew climatic shifts would challenge their road network. What was uncertain was

where, how and by how much. Transport Scotland approached Jacobs to examine climate models and determine how shifts in weather patterns are likely to affect the Scottish road system. Jacobs experts ran projections with the most recent data and examined steps the transport agency can take to be prepared for the future.

"We took a hard look at the data and made detailed predictions about future challenges for the road network. Then we could come up with strategies Transport Scotland can start considering now," says Jacobs Senior Consultant David Price.

### *Paving the Way*

The Scottish Government is aggressively tackling climatic issues, driven by its world-leading Climate Change Act of 2009 that targets an 80 percent reduction in greenhouse gas emissions by 2050. Transport Scotland has embarked on numerous initiatives to limit the effect of Scottish roads, rail, shipping, and air travel on the global climate. Nevertheless, the agency realizes climate change is happening and is determined to identify and adapt to expected shifts.



## FEATURE | TRANSPORT SCOTLAND

Transport Scotland, in association with Jacobs, first studied this subject in 2005, releasing a report including 28 recommendations for adaptation strategies for the road network. The report was based on projections from United Kingdom Climate Impacts Programme (UKCIP), an organization hosted at the Environmental Change Institute at the University of Oxford. UKCIP coordinates and influences research on adaptation to climate change, and shares outputs ranging from climate, marine, and coastal projections, with stakeholders. In 2009, the program released a new projection model, UKCP09, which includes a wider range of variables and significant refinements to the underlying approach. Transport Scotland recognized it was time to draw on this greater depth of data and update its assessment of road impacts.

Jacobs selected three locations (Glasgow, Aviemore, and Dundee) as broadly representative of the climatic range of Scotland and ran weather projections for these locations up to 100 years into the future. Multiple runs using multiple variables were conducted to develop scenarios based on different assumptions about greenhouse gas emissions and their effect on the climate. The team then examined the consequences of these scenarios on the operation and maintenance of Scottish roads.

### *Changing for the Climate*

The results pointed to increased rainfall as posing the greatest challenge. Floods and landslides are likely to be more frequent and widespread in 50–100 years. The road system was identified as vulnerable.

“The effects in Scotland could be severe,” says Price. “For many communities, these roads are their lifeline.”

Revisions to the design, operation, and management of the road network could mitigate effects and reduce risks. The report confirmed the recommendations from the 2005 study, which include revising the parameters for the design of surface water drainage

performance and watercourse structures, identifying locations where flooding has occurred in the past, predicting areas where floods could strike in the future, and providing a greater level of information to road users on severe weather events.

### *On the Right Path*

Other consequences of climate change were also assessed, including extreme cold and hot temperatures, coastal flooding, and changes to soil conditions. In general, the results of the study aligned with those of 2005, assuring Transport Scotland that they’re on the right path to preparing the Scottish road network for the future.

“The implications of climate change could be challenging for Scotland,” says Price. “But with studies like this, Transport Scotland can improve the resilience of the transport network.” ■



## NASA's Langley Research Center explores energy, natural resource savings with Jacobs' solutions



### POTENTIAL ENERGY

We partnered with Langley Research Center to identify and implement potential efficiencies for the center including locating alternative fuels for its steam plant.

NASA's Langley Research Center (LaRC) in Hampton, Virginia, USA, is not only the nation's oldest aviation and aerospace research lab, it is also one of the busiest. Some 3,300 civil service and contract employees set out every day to push the boundaries of aeronautics, atmospheric sciences, and space exploration.

All this research uses energy—a lot of energy. Imagine the resource demands of a computer system capable of modeling the earth's atmosphere. Wind tunnels able to generate speeds of Mach 7 and temperatures of 3500 degrees Fahrenheit. A data center storing 2 petabytes of data, roughly equivalent to more than 13 years of HD-TV video.

#### *Pushing Future Frontiers*

As energy costs rise and NASA's commitment to sustainability strengthens, Langley facility managers are working to find more efficient ways to operate. As a partner in this effort, Jacobs utilizes efficient system design expertise and creative energy solution experience to lead a Utilities Special Interest Group at LaRC to identify and to enact initiatives to drastically reduce natural resource consumption and significantly increase renewable energy usage.

Team members consist of NASA, Jacobs, and City of Hampton personnel. Together, they have found innovative, cost-effective ways to provide LaRC with steam while dramatically cutting reliance on fossil fuels.

LaRC produces more than 430 million pounds of steam annually, used both for heating and cooling and for laboratory operations and experiments. The campus burned significant amounts of natural gas to generate the steam. If they could find an alternative energy source for steam generation, LaRC could cut its consumption of fossil fuels.

#### *An Opportunity to Re-use Refuse*

Jacobs saw an opportunity in a long-standing Co-Op agreement between LaRC and the City of Hampton's Refuse-Fired Steam Generating Facility, a.k.a. Recoup. This 24-hour operation, open since 1980, burns 72,000 tons of trash from the city and LaRC every year. It was already providing a portion of LaRC's steam, but lacked the capacity to meet more than a fraction of the research center's needs.

Jacobs' staff was confident that the efficiency of the plant could be increased. "We knew that with better communications and interface we

could improve the quantity, efficiency, and reliability of steam from Recoup,” says Stephen Bollman, Plant and Facility Operations Manager.

Major modifications would be required, some to infrastructure, others to operations. A larger steam line, for example, was installed to increase capacity, and changes were made to Standard Operating Procedures at both locations. The team also needed to convince LaRC researchers that the new system would provide the required stability; mission-critical wind tunnel testing cannot be disrupted because the steam system is down. A successful demonstration period proved the Recoup steam pressures could sustain research and were reliable. In summer 2011, the new program went full-time.

**Full-Steam Ahead**

Eighty-five percent of steam produced for LaRC is now generated by burning biomass instead of natural gas. It is estimated that some 50 million cubic feet of natural gas is saved annually, while 43.5 tons of solid waste is expected to be diverted from landfills. Feed water needed was reduced an estimated 8.3 million gallons annually, while the amount of chemicals used to treat the feed water was reduced by 15.9 percent. Energy consumed (BTUs) to heat feed water was also reduced respectively.

**Exploring Additional Opportunities**

Jacobs also found other ways to conserve both energy and water in the steam production system. Previously, incidences of condensate overflow not only caused loss of water but also loss of the BTUs and chemicals needed to heat and treat the water. The Jacobs Steam Plant Management Team analyzed the condensate system and reprogrammed the controls to more accurately determine the priorities for the condensate use. This change to the controls allows automatic valves to route the condensate to Recoup partners when the NASA boilers are not online. The control change is projected to save an estimated 3.9 million gallons of feed water.

Jacobs also identified a better rate with Virginia Natural Gas, saving LaRC an average of 20 percent each month. The combination of all of these initiatives saved NASA nearly \$500,000 in first year costs and is expected to result in further estimated savings of \$1.85 million over the next five years.

**Star Performance: Awards & Recognition**

The LaRC project success has not gone unnoticed. At NASA’s 2011 Environmental and Energy Functional Review (EEFR) outbrief, Jacobs employee Stephen Bollman was awarded an EEFR Star Award for this effort. The entire collaborative team was also nominated for the Agency’s prestigious Environment and Energy “Blue Marble” which is awarded every two years in honor of groups and individuals demonstrating environmental leadership. In addition, the project was highlighted in Jacobs’ 2011 Regional Performance Excellence Awards.

Jacobs and LaRC staff continue to look for ways to save energy at Langley Research Center. “It’s an on-going process — these projects represent a snapshot of our work,” says Douglas Cook, Vice-President and General Manager of the Jacobs contract at LaRC. “Our contract provides services to almost every area of NASA Langley Research Center. We see this as a significant benefit, as it allows us the opportunity to utilize many areas of expertise to find ways to make Langley Research Center as energy-efficient and cost-effective as possible.” ■



## Chiesi Farmaceutici selects Jacobs to formulate sustainable award-winning R&D facility



### SUSTAINABILITY PLATFORM

To help keep sustainability at the forefront of the project, we used the American Society of Landscape Architects' Sustainable Sites Initiative (SITES) guidelines as a reference for The Boardwalk Trail at Lady Bird Lake in Austin, Texas, USA.

Laboratories are among the most difficult facilities to make energy efficient. Typical labs are three to eight times as energy intensive as office buildings.

Crammed with complex equipment that consumes huge amounts of electricity and requires complex air-handling and waste management systems, the challenges of creating a green lab are overwhelming.

That didn't stop Chiesi Farmaceutici. The Italian pharmaceutical company, a leader in the development of drugs that treat respiratory and special care diseases, resolved to make its new lab in Parma, Italy not only the headquarters of its research and development initiatives but also the most sustainable facility in its class.

The result is their new 236,806-square-foot building. The lab pioneers innovative approaches to sustainability and has become an award-winning model of green design.

### A Potent Combination

Chiesi began by partnering with Jacobs for master planning, laboratory programming, design services, construction management, and commissioning. Chiesi counted on Jacobs for expertise in both laboratory planning and sustainable design and engineering.

### Focus on Flexibility & the Individual Worker

The team approached design with a philosophy that put "the person at the center." In other words, the goal of the design was to support the individual worker and encourage comfort, productivity, and the exchange of ideas.

The project team invested significant time studying emerging trends and developments in laboratory design; it made sense that a facility dedicated to cutting-edge research should itself be based on research. For example, the building incorporates recently developed "FlexiLab" concepts that allow laboratories to constantly evolve based on changing research needs. Flexible, modular design enables workspaces to be reconfigured as necessary without limiting their capabilities.

### Four Key Sustainable Priorities

Sustainability drove every aspect of the project. The team concentrated on four priorities: reducing demand, harvesting free energy, increasing efficiency, and recovering waste.

- **Reducing demand** began by orienting the facility on the site to optimize daylight within the building. Internal glass walls allow sunlight to reach the core of the

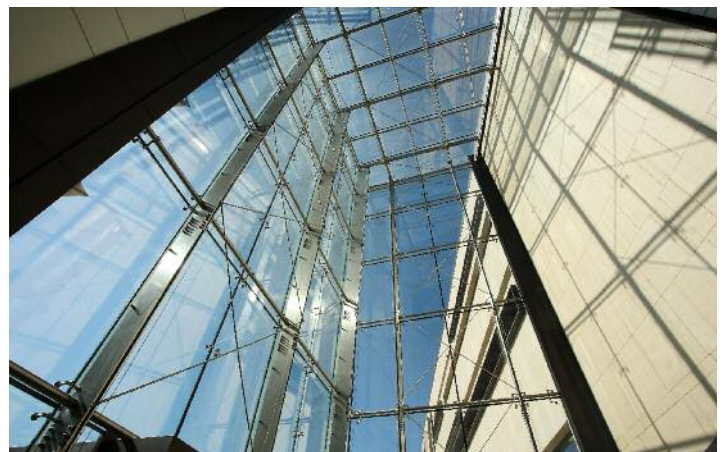
structure. In addition, designers concentrated the most energy-consuming equipment in dedicated rooms designed to balance heat loads.

- **Harvesting free energy** required the development of a comprehensive energy strategy known as the “Energy Hub Scheme” that integrates renewable and traditional energy sources. Sunlight is harvested through an array of solar panels on the roof and supplies a significant portion of the building’s electricity needs.
- **Increasing efficiency** meant working from the outside in. The building envelope combines a ventilated façade, thermal insulation, and solar shading to allow fresh air and sunlight to enter the building, while heat is kept out. Innovative fume hood technology ensures the efficient operation of these typically energy-intensive systems.
- **Recovering waste** started with seeking out areas where energy was lost. One area of focus was heat from exhaust air, an energy source that is typically ignored due to fear of possible toxic chemical contamination. Experts developed a dedicated system that safely transfers thermal energy from exhaust air to the hot water circuits of the HVAC heating system and results in doubled energy recovery.

Chiesi celebrated the success of its new facility upon its opening in 2011 and gave Jacobs credit for helping achieve the firm’s sustainability goals. “Jacobs delivered on its promise, embracing our impulse towards innovation, working with us to put our vision into practice, and fully meeting our requirements of a sustainable facility,” says Andrea Chiesi, Chiesi Farmaceutici’s R&D Planning and Control Director.

## *Facility Awards & Recognition*

The design achievements at the Chiesi lab have been widely recognized. In addition to winning the Jacobs’ 2011 President’s BeyondZero® Excellence Award, the building won the Facility of the Year Award in the Sustainability Category from the International Society for Pharmaceutical Engineering (ISPE), INTERPHEX, and Pharmaceutical Processing Magazine. In granting the award, ISPE praised Chiesi’s “innovation in sustainability,” noting that “Chiesi’s comprehensive sustainability strategy overcame complexities inherent in laboratory systems. ... The strategy resulted in the design and build of innovative systems and processes that maximize the use of natural resources and minimize the energy consumption and environmental impact of the facility.” ■



## New Lanark Trust and others ask Jacobs to preserve cultural and historical artifacts



Rock slope and old masonry walls at New Lanark after stabilization works.



Rock slope and old masonry walls at New Lanark prior to stabilization works.

### SUCCESSFUL HISTORY

Even a greenfield project site can have a history: Cultural artifacts and historical significance create challenging — and often unexpected — requirements to identify, protect, and preserve details from the past. Historical sustainability is a trend we see expanding across our projects.

It may seem as if planners, architects, and engineers start from a blank slate, but smart professionals know the greenest of greenfields could hide the ruins of a prehistoric settlement, the remains of a battlefield, or the artifacts of a culture.

Sustainability involves not just preserving natural ecosystems but also cultural and historical environments, and Jacobs protects special sites around the world. In some projects, the goal from day one is to maintain a historic treasure; in others, no one knows cultural artifacts are at risk until they surface. In every case, Jacobs experts are ready to make sensitive decisions about unique resources.

Historic preservation drove decision-making at Scotland’s New Lanark Village, an industrial village founded in 1785. A UNESCO World Heritage Site, the community is built along the steep Clyde Valley. Row homes and mill buildings are supported by retaining walls more than two centuries old.

### Solid Support

In 2007, the New Lanark Trust asked Jacobs to assess the condition of walls and slopes in one part of the village, and the firm identified several areas at risk. While the Trust was applying for funding to begin remediation, one wall collapsed, sending rubble plunging down a hillside. Jacobs undertook emergency repairs, and then went to work to prevent similar accidents.

In some areas, Jacobs designed double-layer walls, an inner wall of mass concrete and an outer wall of traditional masonry; the result is both authentic and secure. Along rock slopes, the team rejected traditional concrete buttresses, which would have stood out as modern. Instead Jacobs designed buttresses with varying block sizes and orientations that mimic the surrounding rock.

“Today this area of New Lanark presents the same appearance it has for centuries but with all the safety of a modern site,” says Jacobs Assistant Project Manager Andrew Robbie.



*Lighting the Way*

The Cape Canaveral Lighthouse in Florida isn't as old as New Lanark Village, but the 1868 structure has a rich history of its own. Situated overlooking the launch sites for the Gemini, Mercury, and Apollo space programs, the lighthouse has long been a favorite viewing area among NASA scientists.

The lighthouse, owned by the U.S. Air Force, was refurbished in 2007, but soil studies revealed the area was contaminated with lead, likely deposited into the soil from paint. Some polychlorinated biphenyls (PCBs) contamination was evident as well. However, standard mitigation techniques—basically excavating the soil and disposing of it off-site—couldn't be used.

Archaeological studies showed that the site was utilized by Native Americans during prehistoric times, and it could contain artifacts and even human remains. These, along with historic features from buried or demolished lighthouse buildings, had to be preserved.

Experts from the Air Force and Jacobs developed a creative approach. First, they conducted a survey to identify site features. Soil was carefully sifted for artifacts. Then the 2.5 acre site was tilled, which thoroughly mixed the soil. Soil never completely left the site, but rather was stockpiled while the tilling process took place, and mixed in approximately 100 cubic yard lots. Samples were taken to verify the soils had been thoroughly mixed and cleanup targets were met. At the end of the project, the site was restored to grade with the treated soil. The clean-up was also instrumental in providing information to the 45th Space Wing archeologist about the lighthouse's historical features. All historic features were documented, and numerous artifacts were recovered.

Now visitors can again watch launches from the Cape Canaveral lighthouse grounds.



## FEATURE | HISTORICAL SUSTAINABILITY



Image courtesy Spinner Publications



### *Navigating the Unexpected*

At least at New Lanark Village and Cape Canaveral project managers started work with historic preservation as a priority. At New Bedford Harbor in Massachusetts, it came as more of a surprise. New Bedford Harbor is a Superfund site that was contaminated with toxic polychlorinated biphenyls (PCBs) during decades of industrial use. Jacobs was selected by the New England District Corps of Engineers to lead cleanup efforts and is at work removing and treating some 900,000 cubic yards of sediment.

As the river was being dredged, crews noticed historic artifacts within the mud. New Bedford has a maritime history dating to the 1600s, and sediment from the harbor contained rope, glass, iron barrel hoops, and scraps of wood. Based on the new findings, the client expanded the scope of work on the project, and Jacobs also began assisting the Corps with documentation, preservation, and interpretation of the artifacts.

The most dramatic find came in 2009, when crews unearthed timbers from a previously unknown shipwreck. Excavation turned up a ship's keel, several ribs, and planking fragments dating to the late 1700s. Intriguingly, the timbers were charred, and archaeologists suggested the ship could have been among those burned in the 1778 British attack on New Bedford during the Revolutionary War.

"Our pre-dredge surveys identify a lot of debris, but we have to be ready for anything," says Jacobs Project Engineer, Anita Rigassio-Smith. "We are here to clean up the site, but we also have to be sensitive to the legacy of the City."

Rigassio-Smith's attitude is shared by Jacobs experts across disciplines and continents, since at any moment the most simple of projects can be transformed into one with complex cultural or historic elements. The moment a bulldozer unearths an artifact, everything changes—and Jacobs staff are ready. ■



Image courtesy Spinner Publications



## Jacobs helps bring sustainable data centers online



### POTENTIAL ENERGY

We partnered with Langley Research Center to identify and implement potential efficiencies for the center including locating alternative fuels for its steam plant.

**S**ustainable Data Centers” may seem like a contradiction in terms. These hubs of computing power combine servers, storage, communications, and backup equipment consume vast amounts of power — an average of 100–200 percent more than typical office space.

In fact, data centers accounted for 1.3 percent of all of the electricity used in the world in 2010 and 2 percent of all electricity in the United States, according to a research report from Stanford University. The good news? The total is actually less than had been predicted: In 2007, the EPA projected that from 2005 to 2010 data center energy consumption would double. Growth over that period was only about 56 percent.

Experts point to a number of factors that may have contributed to this reduced growth in energy consumption, including the economic downturn, but one in particular merits attention: improved energy efficiency in data center design and operations. The other good news? Incremental improvements in efficiency can make a big difference. “Because of the volume of energy consumed, even modest percentage increases in energy savings should result in enormous energy reduction,” says Jacobs sustainability expert Jonathan Weiss.

### Cool Design Trends

One of the biggest challenges in data center design is managing the heat load. Computer and communications equipment generate vast amounts of heat, which has conventionally been managed with mechanical refrigeration systems. Often, half the energy used by a data center is for cooling. Sustainable data centers manage heat more efficiently, in part by letting it rise. Data centers have typically been treated like office space, with temperatures kept at comfortable levels for people. “But servers aren’t people,” says Weiss. “They can run as well at 90 degrees as at 70.”

Designers have also turned to passive cooling systems, which in some cases use cool outside air to mitigate heat in lieu of mechanical refrigeration. “New centers are being designed with optimized cooling system temperatures to leverage their surrounding environment by means of economizers and passive evaporative cooling systems,” says Jacobs mechanical engineer Michael Schwarz. “Data centers on large campuses are harvesting heat to warm other systems or parts of the campus.”

## FEATURE | DATA CENTERS

### *Numbers Smart*

A Jacobs design team, in conjunction with RTKL Associates, applied many of these concepts to the design of a new campus for the National Geospatial-Intelligence Agency (NGA) at Ft. Belvoir, Va., USA. The campus' 60,000 square-foot data center operates at high temperatures and includes several cooling air management strategies to maximize water-side economizer operation, which occurs when chillers are turned off and only the cooling towers are used to reject heat from the water that circulates through the data center's floors. These strategies also permitted flexible high-density computer installation. The NGA Campus East achieved LEED Gold Certification, due in part to the efficiency of the systems supporting its data center.

### *Liquid Assets*

Water-cooled chilled water systems with cooling towers are a preferred method of providing chilled air or water to data centers, but a challenge of cooling towers is the enormous amount of water they consume. "A 15-megawatt data center can use up to 360,000 gallons of water a day," says Jacobs data center expert Jerry Kroupa. "It's sometimes more than a local utility can handle."

A recent data center project for a global pharmaceutical manufacturer factored water use into the cooling system selection process. Because water conservation is one of the company's corporate initiatives, the selected cooling system utilized less energy-efficient air-cooled chillers, but used only a fraction of the water of water-cooled chillers. As a result, the cooling system that was designed hit the perfect balance between energy and water conservation.

Location is also critical to data center design, says Kroupa, with companies looking for locations that can provide large quantities of inexpensive water. Some companies are making deals with utilities to use recycled water, while others are capturing and reusing rainwater.

### *Pursuing Next-Generation Standards*

With their unique needs, data centers have posed a challenge for industry groups such as the U.S. Green Building Council (USGBC) looking to evaluate the sustainability of buildings. Few data centers have sought LEED Certification since previous standards have not addressed the specialized nature of these facilities.

However, numerous industry authorities, including Jacobs data center experts, have collaborated with the USGBC to expand the latest LEED rating system to specifically address data centers.

"The next version of the LEED rating system will be much more meaningful to data center designers and owners," says Schwarz.

In addition to requiring modeling and documentation of industry metrics such as Power Utilization Effectiveness (PUE), points are now tailored for specific features that are very relevant to data center design; such as reference to ASHRAE 90.1-2010, cooling tower water use, water metering, and advanced energy metering.

Due to their high process energy consumption, it is often cost-prohibitive to create truly sustainable or carbon-neutral data centers. However, significant improvements can be made in energy and water efficiency, which lowers both the environmental impact and operating costs of data centers. And because of the increase in scale of many data centers due to advances in cloud computing and on-demand internet services, even small, incremental improvements can produce dramatic results and savings.



## British Army enlists Jacobs to advise on waste management



Image courtesy Purbeck District Council

Waste has become an increasingly costly and complex area to manage effectively, with a range of emerging alternative waste technologies to understand. One of the key benefits of the Jacobs waste advisor has been the capability to tap into wider expertise when we need it.'

Col. Richard Castell  
Head of Logistics Support at Army 4th Division

**BRITISH ARMY**

### DELIVERING EFFICIENCIES

The British Army asked us to fill the Army's first-ever waste management post: A position that has helped the Army reduce waste, realize efficiencies, and execute a strategic sustainability plan with continued monitoring.

Since 2004, Jacobs' Waste and Resource Management Team has provided the British Army with advice on its waste management program, helping to reduce waste management costs by nearly £1 million and enabling the Army to make significant progress toward its sustainability targets.

The Waste and Resource Management Team has been in existence for approximately 50 years. As the industry has evolved and client needs have changed, the team has evolved as well. The current team structure and services have been in place for approximately 20 years. The team works across both public and private sectors, with local governments, regulatory agencies, and more, both in the United Kingdom and internationally. In short, the team has many years of varied experience. But what they did as part of the British Army's sustainability campaign was a first.

### Target Sustainability

As part of the Army's 'Wear Green, Think Green, Act Green,' sustainability campaign, a Jacobs waste advisor was posted to a six year placement within the Army's facility team. While Jacobs has worked within other government agencies in the past, this was the

first ever waste advisor appointment for the British Army.

In this role the Jacobs waste advisor's primary focus was to help the Army meet its recycling key targets through the development of policies, targets, and waste management guidance. In particular, the Army needed to establish a consistent roll-out of waste performance improvements across its 4th Division.

The 4th Division, the Army's largest estate, stretches across Southern England and accommodates more than 90,000 personnel across 50 major sites and 500 smaller operations. The 4th Division generates a range of waste from office and accommodation areas, to catering and leisure outlets, plus hazardous and clinical waste from vehicle maintenance and medical centers.

### Strategic Action

Jacobs' role involved working strategically to develop policies and procedures compatible with the Army's working practices. The program began with a major review of the client's waste management procedures to understand what and how much waste was being generated. The team found that substantial cost savings could be achieved by improving contracts and

procurement methods, and identifying areas where other parties were legally responsible for disposal costs. From this information, Jacobs drafted a Waste Strategy and Action Plan, and an annually updated Waste Directive with supporting detailed guidance on all aspects of waste management. The directive included site responsibilities for waste and specifying recycling plans, appropriate bin selection to maximize recycling performance, and best practice disposal specific to Army wastes.

The Waste Strategy and Action Plan helped improve recycling rates from less than five percent to 15 percent in the program's first two years. Since then, the 4th Division has raised its recycling rate to 40 percent with the help of program briefings and detailed guidance offered at each major site by the Waste and Resource Management Team. The Action Plan also included the introduction of the U.K.'s best practice approach of "bin-less" office recycling in over 60 percent of the 4th Division, where staff recycle their personal waste at the nearest recycling point instead of dumping waste in a personal desk-side bin.

Overall, the sustainability program has resulted in a 15,726 tonnes landfill reduction; the equivalent of saving 4,549 tonnes of CO<sub>2</sub>Eq. This data was approved by the client as a JacobsSustainability+ achievement. To date, more than £400,000 in disposal cost savings have been achieved as a result of the introduction of the first phase of recycling.

### *Gathering Intelligence*

Additional critical requirement of the program were the establishment of sustainability performance monitoring and the tracking and reporting of the 4th Division's waste reduction performance. These measures ensure the Army is on track in meeting the United Kingdom's Sustainability in Government targets across all departments. Jacobs developed a tailored database and data gathering procedures to collate data on the various types of wastes generated by the Division. The Jacobs waste advisor advised and conducted trials to develop a common Ministry of Defence waste reporting tool.

"Having an in-house expert on waste who understands how we work has proved highly valuable," says Col. Richard Castell, Head of Logistics Support at Army 4th Division during the contract period. "Waste has become an increasingly costly and complex area to manage effectively, with a range of emerging alternative waste technologies to understand. One of the key benefits of the Jacobs waste advisor has been the capability to tap into wider expertise when we need it. This enables my team to keep ahead of legislative requirements and evaluate the latest developments and best practice approaches to managing waste that might be appropriate for our estate."

Jacobs' waste expertise has also proved useful in the monitoring of waste contractor performance, helping to achieve a further £175,000 in savings. The team's work in this area included redrafting contracts to ensure delivery of waste targets, training contract monitoring teams, and conducting service efficiency surveys.

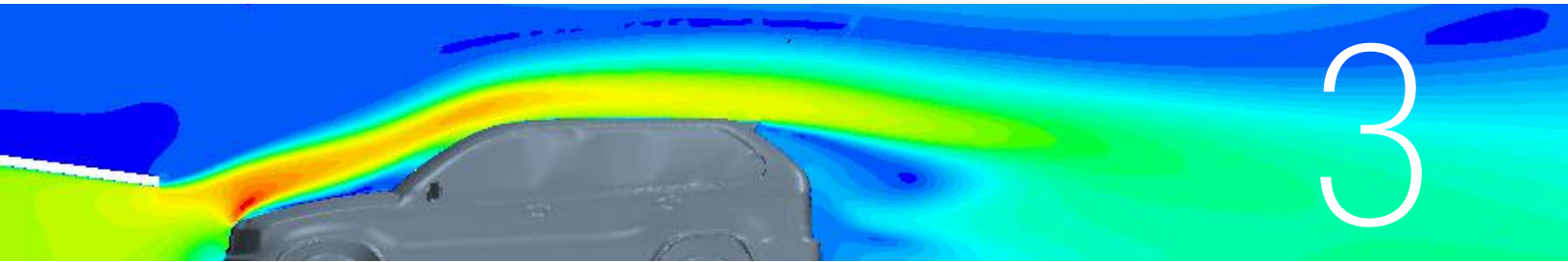
Maj. John Capeling, who managed the waste advisor program, adds, "From a 4th Division perspective, these sustainability gains could not have been identified without the development of the Jacobs tailored waste reporting database for the Division, which went on to influence a common Ministry of Defence platform of waste reporting through Transaction Recorder and Summary Handler (TRaSH)."

### *Future Framework*

While the appointment of a Jacobs waste advisor proved valuable to the British Army, the future appointment of waste advisors within the Ministry of Defence is currently under review as part of a major reorganization of this U.K. government department. In the meantime, the Army is continuing its sustainability program with the benefit of a strategic framework in place for continuing improvement to its environmental performance in waste reduction and recycling. ■

# Our Processes & Tools

Solving our clients' toughest challenges and offering them the best services possible are always our leading priorities.



Growing a strong, sustainable business allows us to provide the best possible services to our clients, who in turn are able to grow their businesses and meet their sustainable project goals wherever they do business, all around the world.

As a global service provider doing work across multiple and varied market sectors, we are keenly aware of our clients' need for best practices to support their sustainability goals. We deliver the tangible technical solutions that really make a difference to our clients' social,

economic, and environmental goals, resulting in a solid triple bottom line.

The following pages detail our overarching project development methodologies, and provide just a few examples of the types of tools we use to support each phase of the project life cycle of plan, design, build, operate, and maintain. We also address industry standards and regulations, with particular emphasis on safety and the environment.

We believe our project delivery tools and processes contribute to better solutions for our clients, more efficiently executed projects, and longer lasting, more energy-independent facilities in the community. We also believe that our employees' adoption of our core values, culture of caring, and commitment to ethics and integrity brings a higher level of service to our clients, ultimately resulting in more sustainable solutions across the globe.

**'We take lessons learned from our previous projects and improve our work processes to enhance quality control and project management. Particularly with sourcing, we seek to bring additional lead time and cost savings to our clients.'**

Zou  
Jacobs, Procurement Director  
Shanghai, People's Republic of China

## *Health, Safety & Environment*

Launched in 2007, Jacobs Safety Information Management System (JSIMS) is our multilingual, Web-based system that tracks safety incidents, including environmental safety, around the globe. JSIMS supports analysis of incidents, reporting, follow-up, and sharing of lessons learned at the project and office levels. JSIMS allows us to collate useful

# OUR PROCESSES & TOOLS

information on the types and root causes of incidents so we can best identify improvement opportunities by client, region, industry, contract type, and more. All environmental incidents are recorded in JSIMS to ensure visibility, discipline, and a history of lessons learned.

## Planning

### **Jacobs System to Ensure Project Success (JSTEPS)**

JSTEPS is the Jacobs system that demonstrates repeatability. Repeatable service delivery is instrumental in achieving on-time and on-budget project delivery. JSTEPS is a flexible delivery system that was developed with the specific understanding that every client has unique needs. This tool can be customized to meet the needs of our clients in every industry we serve.

### **C-CLEAR**

Carbon management is increasingly a priority for a number of our clients. To help focus our efforts in working to deliver client needs and to standardize our approach, the sustainability team in the United Kingdom developed the C-CLEAR energy management and carbon reduction tool to use during project planning. The basic C-CLEAR method takes the project and client team through the following six steps: Communicate, Calculate, List, Evaluate, Agree, and Review.

### **Community Engagement on behalf of our Clients**

We Are Relationship-based. This core value is demonstrated through our commitment to building long-term relationships with our clients, and is taken to the next level through helping our clients build relationships with the communities in which they work. To stay on the cutting edge of all practices and processes aiding in public participation, we are an active member of the International Association for Public Participation (IAP2), an international association of members who seek to promote and improve community engagement practices in relation to individuals, governments, institutions, and other entities. A Jacobs employee serves as the United Kingdom & Ireland president for IAP2. Membership in this association has proved beneficial for us and of our clients, as we learn and apply practices that allow us to improve the way we engage with our communities and help us to be good neighbors. These practices have been particularly helpful to clients for whom Jacobs has undertaken large infrastructure projects.

For the UK's Environment Agency (EA), our expertise in community engagement was instrumental in the Flood Risk Management project for North East Wales. Jacobs worked with the EA to develop a community engagement plan intended to successfully demonstrate to the public what was planned and why. This engagement process focused on what would happen, why it would happen, and emphasized the need for community input. It is vital that communities feel the project team is listening, from a very early stage in the project. Through the implementation of good practices such as public consultation workshops and supermarket exhibitions, we focus on community ownership of the project, which equals better outcomes in the long-term.

Jacobs staff also participates on a technical committee on AccountAbility. This committee is driven by insurance underwriters with the goal of establishing mandatory good practices for stakeholder engagement. AccountAbility's AA1000 Stakeholder Engagement Standard provides a framework for quality stakeholder



# OUR PROCESSES & TOOLS

engagement. Adherence to these standards is intended to ensure the projects go smoothly, avoiding miscommunications that can cost time and money.

As a natural evolution of our sustainability services, Jacobs is well positioned to advise and implement best practices around policy and engagement for our clients. We have a responsibility to our clients to advise them of potential project risks around community engagement. Even if a solution is technically brilliant, it may not be successful if community needs are not taken into consideration. When we work with our clients to get into the community early in the project development process, we establish a relationship, and build the foundation for good results.

## *Designing & Building*

### *Eco-charrette*

An eco-charrette uses the same intensive workshop setting as a typical charrette, but the eco-charrette's subject matter is focused on the sustainable principles of the project rather than the programming. Our high-performance eco-charrettes help clients identify and outline the first steps toward sustainable design, establish an all-inclusive project team, and create a vision for the project. Some of our most recent eco-charrettes include a Net Zero Feasibility Study and multiple studies targeting LEED Silver minimum certification.

### *Building Information Modeling*

Building Information Modeling (BIM) facilitates the complex processes and analyses associated with building performance and evaluation. We create models to predict building performance and include facility sustainability analysis using standards such as the United States Green Building Council's Leadership in Energy and Environmental Design (LEED), mechanical simulation and analysis, daylighting, energy performance, and life cycle assessment. Linking BIM to analysis tools can provide immediate feedback for alternate design options that can help make a project more sustainable.

## **ACCOUNTABILITY**

<http://www.accountability.org/>

AccountAbility is a leading global organization that provides innovative solutions to the most critical challenges in corporate responsibility and sustainable development. Since 1995 they have been helping corporations, non-profits, and governments embed ethical, environmental, social, and governance accountability into their organizational DNA.

## **IAP2**

<http://www.iap2.org/>

IAP2 is an international association of members who seek to promote and improve the practice of public participation in relation to individuals, governments, institutions, and other entities that affect the public interest in nations throughout the world. IAP2 carries out its mission by organizing and conducting activities to:

- Serve the learning needs of members through events, publications, and communication technology
- Advocate for public participation throughout the world
- Promote a results-oriented research agenda and use research to support educational and advocacy goals
- Provide technical assistance to improve public participation

# OUR PROCESSES & TOOLS

## **Carbon Calculator**

The Carbon Calculator was originally developed in 2007 as a result of the request from the Environment Agency (EA) in the United Kingdom. The EA, the key environmental regulator in England, commissioned Jacobs to develop a carbon calculation tool to support sustainability decisions for its flood-risk construction work. The Carbon Calculator calculates the embodied carbon dioxide of materials, plus CO<sub>2</sub> associated with transportation of those materials. Since 2007, Jacobs has continued to develop adaptations and additional uses for the Carbon Calculator so it may be used by more construction clients, contractors, and consultants for their project needs.

The EA Carbon Calculator was updated in 2011. Main amendments include:

- Inclusion of Top 10 Tips based on lessons learned from the use of the tool to date
- Hints and tips to reduce carbon based on materials selected
- Format changes to allow input of missing/bespoke materials
- Simplification of the plant emissions, site energy use and personnel travel sections to reduce input time and improve clarity
- Inclusion of updated ICE data in units of CO<sub>2</sub> equivalents
- Capture of lessons learned for each project



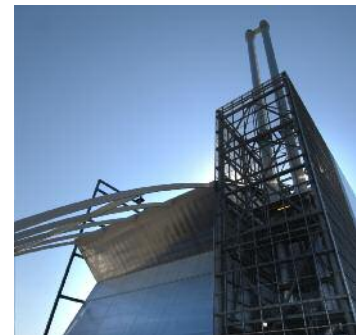
### **LANGAGE CCGT POWER STATION**

Jacobs was involved in the Langage CCGT Power Station project from inception to completion. We produced concept and detail design, obtained planning permission, and were involved with public inquiries and presentation to the Commission for Architecture and the Built Environment. Langage, which generates more than 900 MW of electricity, is located at the edge of Dartmoor National Park in Devon, England, the smallest area ever allocated for a power station in the United Kingdom.



### **ISLE OF MAN EFW**

Jacobs delivered the EPC contract for design, supply, installation, and commissioning services for SITA's £45 million, 7.5 MW, 60,000 tonnes per annum integrated EFW facility on the Isle of Man. The iconic design of the facility is based on a Viking ship, reflecting the heritage of the island.



### **PORTSMOUTH ERF**

Jacobs delivered the detailed civil, structural, and architectural design works, construction drawings, and site supervision of Portsmouth Energy Recovery Facility. The facility, operated by Veolia Environmental Services, has been fully operational since 2005, processes 165,000 tonnes of non-recyclable household waste, and supplies up to 14 MWs of electricity to the National Grid, which is enough for more than 20,000 local homes.



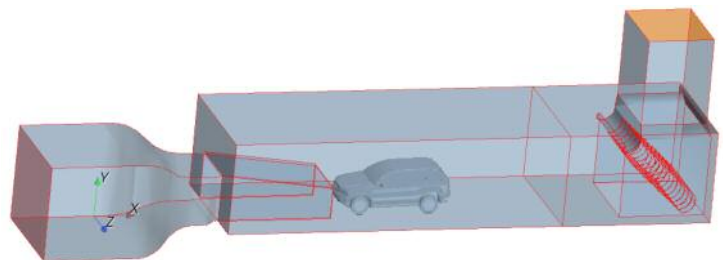
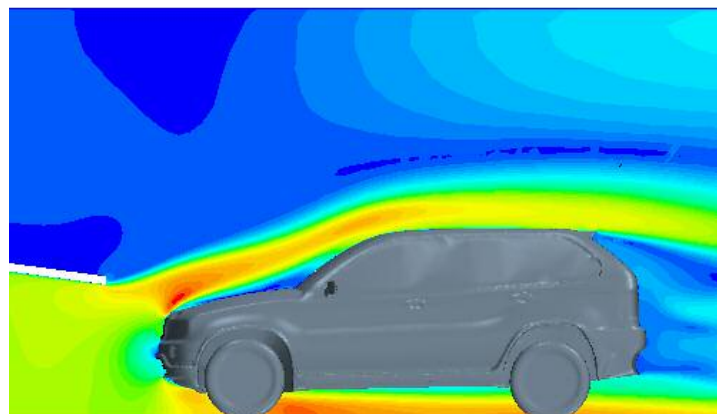
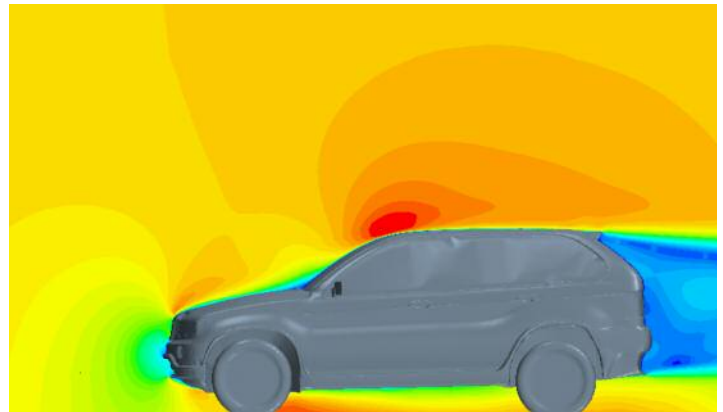
# OUR PROCESSES & TOOLS

## *Operating & Maintaining*

### **Computational Fluid Dynamics**

Jacobs has leveraged computational fluid dynamics (CFD) expertise and tools once primarily used for the automotive and aerospace markets to help our clients realize \$16 million in cost avoidances in the last 12 months. CFD is a tool that allows our engineers to work with clients from the conceptual to the final design process, providing better understanding and optimized products. This tool allows facilities to operate more efficiently and reduce energy consumption. CFD is used to improve technical performance through increased productivity and operational efficiency, and to enhance safety by identifying potential hazards before accidents occur. Our automotive clients have also utilized CFD to improve the aerodynamics and fuel efficiency of vehicles, furthering our sustainability efforts. Our boundaryless approach in sharing our CFD services has enabled us to leverage adjacencies between our offices in support of diverse markets worldwide. To date, CFD consulting services have supported clients in a variety of markets, including oil and gas, petrochemical refining, environmental programs (water resources), energy, pulp and paper, and buildings industries.

A variety of our CFD projects have involved the implementation of design modifications to refinery components to increase operational efficiencies and decrease CO and other pollutants. Specialty tools, such as CFD, are value-enhancing methods Jacobs uses to team with our clients to meet and exceed stringent environmental standards in the oil and gas industry. In one recent project, CFD analysis was used in a third stage separator unit to reduce refinery particulate emissions to the atmosphere. For other clients, CFD has been utilized to study the erosion impact of slurry flow on pipe fittings. As a direct result of these analyses, many of the pipe fittings were modified to increase their potential lifespan from less than one year to more than 10 years. By designing a robust system, the annual maintenance and replacement costs were minimized. More importantly, the new design decreases the potential damage to the environment in the case of a failure.



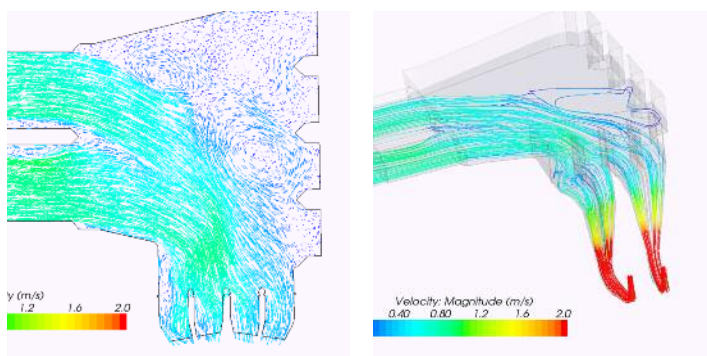
# OUR PROCESSES & TOOLS

Some project examples using CFD include:

## ■ **Loch Sloy Hydro Power Station Conversion**

*Scotland, United Kingdom*

Jacobs Technology provided CFD analysis in support of the Glasgow office as part of their commission to design a pumped storage conversion to the existing Sloy Hydro-Electric scheme, owned by Scottish & Southern Energy (SSE). The footprint available for the construction of the pumping intake of the new pumping station was limited. CFD was used to develop the angular Jacobs design which enabled the uniform inlet flow conditions required by the plant manufacturer to avoid cavitation on the pump runner. This saved a potential re-design of the inlet which would have required significant capital costs and generation outages to the power station (with subsequent massive loss of generation revenue).



## ■ **Delphi**

*Luxembourg*

In a project with Delphi, we used CFD to demonstrate blockage effects in climatic wind tunnels and to show why these effects need to be accounted for to provide the correct wind test conditions when developing automotive components. By developing and implementing the corrections suggested by the CFD, Delphi is able to reduce energy consumption in its facility by up to 15 percent. Based on single shift operation, this represents a savings of up to 200 MW-hr per year, or up to €40,000 per year.

## **Commissioning**

Commissioning describes services designed to continually improve asset management and performance and plays an important role in sustainable design. At Jacobs, commissioning goes beyond industrial facilities and buildings. Maintaining system performance of any asset contributes to increased energy efficiency over the life cycle of the asset and furthers the sustainable goals of our clients. At facilities we operate, our goal is a safe and environmentally sound system that performs at the highest level possible throughout its life cycle. We strive to maintain performance that is within 98 percent of the original design performance level.

## **Jacobs' Sulfur Solutions**

We are the global leader in treating gas and recovering sulfur from fossil fuels for the global heavy industrial and process markets. We supply expertise, technology, and full delivery for cost-effective sulfur recovery plant operations. We find optimal solutions using open processes, our proprietary SUPERCLAUS® and EUROCLAUS® technologies, or others that we sub-license. Our technologists are experts in all of the key processes to maximize “Sulfur Block” performance. These include gas/liquid treating technologies, NH<sub>3</sub> destruction, hydrocarbon destruction, O<sub>2</sub> enrichment, sulfur degassing, and sulfur handling.

Jacobs recently executed a project for Kuwait Petroleum Europoort (KPE) in Rotterdam, The Netherlands, that called for building a new sulfur recovery unit on the basis of a modular design. The KPE refinery needed to increase their SO<sub>2</sub> emission performance in order to be in compliance with new IPPC and Dutch authority emission regulations. Jacobs Comprimo® Sulfur Solutions conducted a study in 2006 to reduce refinery SO<sub>2</sub> emissions. Upon completion of the initial study, Jacobs undertook additional detailed studies, and then began design for a new sulfur recovery unit based on the SUPERCLAUS® process. The unit has been fully operational since August 2010. It is operating well and fully performing to contract specifications.

# OUR PROCESSES & TOOLS

## Sulfate Removal System:

### An Environmental Success Story for Chlor-alkali Plants

The chlor-alkali industry produces chlorine and caustic soda in about 600 plants worldwide. A collective commitment to ensuring the best health, safety, and environmental practices in the manufacture of chlor-alkali products is essential to the sustainable development of this large and closely watched industry. Our Chemetics® patented Sulfate Removal System (SRS) is a novel nanofiltration-based process that replaces conventional methods of sodium sulfate control in chlor-alkali plants. Based on the principle of selective filtration of molecules and ions through membranes, the SRS treats brine effluents to reduce the effluent volume and increase the sulfate concentration — both by a factor of over 10. As an environmentally beneficial and economically attractive technology, the SRS also eliminates solid wastes and the handling of hazardous compounds associated with other treatment methods.

## SRS Unit in Action: Charting Results

The stream summary table shown, which corresponds to a recently sold SRS unit with a capacity of 242 kg/h  $\text{Na}_2\text{SO}_4$  removed, summarizes the flows into and out from the SRS unit, providing a quantitative basis for assessing its environmental benefit. This particular SRS reduces the brine purge volume from 35  $\text{m}^3/\text{h}$  to 2.3  $\text{m}^3/\text{h}$  (a reduction of 95 percent) or completely eliminates the consumption of 8.5 tonnes/day of toxic barium chloride and the associated production of 9.5 tonnes/day of barium sulfate solid waste.

## Reliable Performance

Our Chemetics® SRS technology has operated successfully over many years, and has been adopted by more than 70 plants worldwide. In addition to its environmental and occupational safety benefits, the technology offers an attractive return on investment through reduction of plant operating costs, and has found widespread acceptance in the chlor-alkali industry.



A smaller SRS unit with manual control.



A larger unit with automatic control.

## SRS STREAM PROPERTIES



STREAM FLOW (mass/concentration)	1		2		3	
	kg/h	kg/m <sup>3</sup>	kg/h	kg/m <sup>3</sup>	kg/h	kg/m <sup>3</sup>
Sodium Chlorate ( $\text{NaClO}_3$ )	494	10	23	10	471	10
Sodium Chloride ( $\text{NaCl}$ )	9,880	200	398	176	9,482	201
Sodium Sulphate ( $\text{Na}_2\text{SO}_4$ )	331	6.7	233	103	98	2
Minor Impurity	0	0	0	0	0	0
Water ( $\text{H}_2\text{O}$ )	44,125		1,991		42,134	
Total Mass Flow	54,830		2,645		52,186	
Volumetric Flowrate		49.4		2.3		47.1

# OUR PROCESSES & TOOLS

## Getting Results

### JacobsValue+<sup>SM</sup>

- \$3.7 billion in 2011

JacobsValue+ is an outstanding example of a program that tracks innovative practices and ideas and then implements them in applicable situations, passing the value created (typically savings) and benefits on to our clients. The primary objective of JacobsValue+ is to deliver, measure, and demonstrate value to our clients by increasing their return on investment. In 2011, we saved or avoided an estimated \$3.7 billion, and those savings were passed on to our clients through our JacobsValue+ program.

### JacobsSustainability+

- Launched Summer 2010
- Entries growing year-to-year
- YTD 2012 118% total number of entries for 2011

JacobsSustainability+ is a data capture tool designed by a global team of Jacobs sustainability experts and is a complement to our JacobsValue+ tool. Phase 1 of JacobsSustainability+, released in summer 2010, was designed to capture sustainable-related information, specifically within the categories of carbon savings, green buildings, and energy incentives.

**'Many clients want to add value to their project by implementing Design Reuse or Design Copy methodology, which saves time and money by utilizing the design already completed for one of their previous projects. By evaluating the work performed for the last project on which we partnered, applying lessons learned, and actively managing minimum change, we deliver our services for a nearly duplicate facility, resulting in earlier production dates with reduced capital expenditures for our clients.'**

Andy  
Jacobs, Manager of Projects  
Calgary, Alberta, Canada

As part of the tool's evolution over the last year, three more categories are being added; water savings, waste minimization, and other greenhouse gas avoidance. The addition of the new categories is partly due to an increase in usage of the JacobsSustainability+ tool. As awareness has grown, so also have overall usage of the tool, investment in the data captured and recorded, and suggestions for tool improvement.

The number of entries has continued to increase year over year since we launched JacobsSustainability+ in 2010. By June of 2012, we already had 18 percent more entries than we had for all of 2011. As measurement processes become more advanced, we are able to take lessons learned from the regions with the highest usage rates and apply them to regions where increased usage is desired. This task is made easier because the tool is used across all of our operations.

Overall, we are pleased with the increasing growth and evolution of JacobsSustainability+. Going forward continued measurement and tracking are key to our ongoing improvement. We continue to work to identify opportunities, to increase our already transparent system, to increase awareness, and to set measurable goals. Equally important are the efforts we make to ensure JacobsSustainability+ creates and nurtures an inspiring environment for our project teams to develop ideas around the capture of sustainability-related data. ■



# Project Gallery

Our sustainable services, principles, and practices cross all market sectors and geographic boundaries, and they are designed to help our clients achieve success.



‘By using technology to devise methodologies that streamline work processes and create efficiencies, I help my clients attain their sustainable project goals and provide them with a better ROI: shorten deliverable schedules, better products, or even more comprehensive service.’



Alisa  
Jacobs, Petroleum,  
Chemicals & Energy  
Consultant  
Houston, Texas, USA



ATLANTA BELTLINE, INC.



Historic Fourth Ward Park – Phase I Project  
Atlanta, Georgia, USA

Construction management

- Location formerly a brownfield site
- Recycled pond water used in aeration process
- Recycled granite boulders from Bellwood Quarry used in water features
- Recycled stone used in amphitheatre seating
- LED lighting installed along pond perimeter for safety and security
- 16 feet of vegetation removed during construction replaced by 25 feet of sustainable landscaping

# PROJECT GALLERY



## U.S. GENERAL SERVICES ADMINISTRATION



Rebuilding of Armed Forces Retirement Home post Hurricane Katrina  
Gulfport, Mississippi, USA

Construction management, programming, procurement, commissioning

- LEED Gold Certified
- 36,000-square feet of vegetated roof; garden terraces for all residents
- 7.1-acre wetland on property protected by prohibiting access and restricting disturbance within 100 feet
- 534 residences with floor-to-ceiling windows, maximizing daylight
- Sun control devices enhance architecture, control heat, and prevent glare



## ABERDEENSHIRE COUNCIL



Bervie Braes Slope Stabilization Project  
Stonehaven, Scotland, United Kingdom

Forensic investigation of road failures; ground investigation planning and supervision (including non-invasive geophysics and invasive boreholes); ground modeling; slope movement and groundwater monitoring; development of emergency evacuation plan; public presentations and meetings; emergency inspections; detailed stabilization design; construction supervision

- Slope stabilization design minimizes visual impact on natural surroundings
- Upon project completion, former trunk road to reopen as pedestrian/cycle route



## U.S. NAVY



Bachelor's Enlisted Quarters  
U.S. Naval Base, Santa Rita, Guam

Architectural and engineering services

- LEED Gold Certified; one of only a few LEED certified projects on Guam
- Eco-friendly, energy-efficient designs save energy and other resources
- Strategic window location maximizes sunlight and minimize heat
- Solar water-heating panels for hot-water demand
- Photovoltaic array and solar LED lights to meet parking lot lighting needs
- Landscaping with native and drought-resistant plants



## STATOIL PETROLEUM AS



CO<sub>2</sub> Capture Mongstad (CCM) Project  
Mongstad, Norway  
*Images courtesy TCM*

Framework contract — providing engineering and technical assistance services

- New CHP station has made the Mongstad refinery one of the most energy-efficient refineries in the world.
- Integrated with the refinery, the CHP plant has increased the energy efficiency at Mongstad to nearly 80 percent.
- The project is planned to meet rigorous standards for health, safety and environmental management.

# PROJECT GALLERY



## GLAXOSMITHKLINE (GSK)



Engineering Service Provider (ESP)  
Currabinny, Carrigaline, Cork, Ireland

Engineering, procurement, construction management, commissioning and qualification (EPCMC&Q)

- Cork site has recently received Sustainable Energy Authority Ireland (SEAI) Energy Award for 2011
- Energy management policy in line with EU standard EN16001-2009
- Target reduction of 600 tonnes of CO<sub>2</sub> in 2012
- Addition of nitrogen monitors to each plant area so higher users and opportunities to reduce consumption could be identified



## U.S. ARMY CORPS OF ENGINEERS



F-22 Weapons Release Shop Soil Vapor Extraction Systems  
Joint Base Elmendorf Richardson, Alaska, USA

Engineering evaluation, cost analysis, construction, operations and maintenance

- Installation of the SVE system is projected to save the project \$2.4 million
- Cost savings is based on minimal excavation and on-site treatment of contamination rather than excavating and removing the contamination off-site.
- Reduced excavation resulted in reduced equipment time, eliminating a large carbon footprint



## DALLAS/FORT WORTH INTERNATIONAL AIRPORT



Sustainability Performance Management Study  
Dallas/Fort Worth International Airport, Texas, USA  
*Image courtesy of DFW Airport*

Consulting services on sustainability performance management

- Sustainable best practice reference produced for DFW Airport
- Strategies and timeline for advancement of sustainability at DFW
- Approach should realize benefits in cost and risk reduction, better functionality, improved airport profile, employee/stakeholder satisfaction



## U.S. DEPARTMENT OF GENERAL SERVICES



Consolidated Forensic Laboratory  
Washington, District of Columbia, USA

Pre-construction, construction, and post construction phase services

- On track to receive LEED Gold certification when complete
- Building located on District of Columbia-owned brownfield site
- Energy efficiency: 21 percent energy cost savings over baseline
- Water use reduction: 40 percent water use savings over baseline
- Vegetated upper roof (30,000 square feet)

# PROJECT GALLERY



## LE TERRAZZE: JOINT VENUTRE SONAE SIERRA + ING RE



Le Terrazze Shopping Centre, La Spezia  
La Spezia, Italy

Project and construction management, including design coordination, ISO 14000 (environmental) and OHSAS 18001 (HSE) site certification, commissioning assistance, and safety coordination

Architects on project: Broadway Malyan (International Architect), José Quintela Da Fonseca (Lead Designer)

- ISO 14001 Environmental certification- Top quality environmental management standards implemented throughout construction process
- OHSAS 18001 Safety & Health certification – Acknowledges strong commitment to safety and health by continually monitoring working conditions on site and systematically identifying improvement opportunities



## U.S. DEPARTMENT OF DEFENSE



Wastewater Monitoring Station, Interior Alaska  
Interior Alaska, USA

Design and installation

- Continuous monitoring of effluent
- Alarm system notifies if effluent out of healthy range
- Real-time feedback on water quality
- Year-round monitoring of creek health



## U.S. DEPARTMENT OF ENERGY



Lagoon Treatment System: Hanford Nuclear Reservation  
Hanford Nuclear Reservation, Richland,  
Washington, USA

Design, construction engineering support, ecological permitting, and approval assistance

- Evaporative LTS is a zero discharge sewage treatment system
- Surface area sized to enhance evaporation and meet Washington State codes
- Gravity primary mover for waste water between lagoons; facility not expected to need discharge and pumping systems for lagoon operation
- Small amount of mechanical equipment involved; simple operations
- Capacity design influenced by fluctuation in workforce population, site priorities, and budget; plus need for high- and low-level radiological waste management



## SUNCOR ENERGY



Tailings & Water Transfer Project  
Calgary and Fort McMurray, Alberta, Canada

Engineering, procurement, and field support for front end engineering design (FEED), detail engineering, and construction support phases



# PROJECT GALLERY



## VIVERGO FUELS LTD (JOINT VENTURE: AB SUGAR, BP, AND DUPONT)



Bioethanol Facility  
Saltend, Hull, United Kingdom  
*Image courtesy of Vivergo Fuels Limited*

Design and construction management services

- Joint Venture created by BP, AB Sugar and DuPont in 2007
- Platform for large scale biofuel production and implementation of advanced technologies of the future
- Biorefinery on schedule to begin production in 2012
- When completed, is expected to be one of the largest biofuel producers in Europe and the biggest in the United Kingdom



## U.S. ARMY CORPS OF ENGINEERS FORT WORTH DISTRICT, BEXAR COUNTY, AND THE SAN ANTONIO RIVER AUTHORITY



Mission Reach Ecosystem Restoration and Recreation  
San Antonio, Texas, USA

Design services for river restoration, flood control and river corridor analysis, geomorphology, vegetative analysis, landscape architecture, multi-use trail design; final design and construction phase services

- River floodway cross-sectional area being enlarged to allow for addition of native vegetation
- Riparian vegetation zones transition river from urban to more rural settings with successional regimes
- Embayments along flood channel bench mimic ecological functions of oxbow lakes



## NETWORK RAIL



ONW Stockley Airport Junction GRIP 5 — Main Works  
Stockley Junction, London, United Kingdom

Detailed design study

- Project includes viaduct, two flyovers, three ramps
- Ramps designed as Reinforced Earth retaining structures
- Soil mixing improves existing ground/Langley silt deposits
- Soil mixing solution expected to provide significant cost savings
- Soil mixing expected to save large amount of soil from offsite disposal



## LOS ALAMOS NATIONAL LABORATORY



Radiological Laboratory Utility Office Building (RLUOB)  
Los Alamos, New Mexico, USA

Full design services — from conceptual design through construction documents — for the design build contract with construction administration services

- Building envelope design (orientation, materials, and insulation) yielded 20 percent improvement in energy performance
- Incorporation of building materials with 24 percent recycled content
- Diversion of 72 percent of construction-generated materials through reuse, recycle, and salvage

# PROJECT GALLERY



## ARMY CORPS OF ENGINEERS



Wainwright Short Range Radar Removal Action  
Wainwright, Alaska, USA

Project management/construction management, project planning, waste management, construction and excavation execution, report development, and permitting

- Worked closely with local native community
- Used local labor and equipment to perform removal
- Mentored local contractors and laborers to adopt BeyondZero®
- Provided more than 27,000 hours of work and job skills training for local labor force



## DUBLIN CITY COUNCIL



The Dublin FloodResilienCity Project

Hydrological review; rainfall modeling, mapping, and risk assessment; flood risk mitigation; development of flood forecasting and warning system

- Developed flood risk management strategy for Dublin to address extreme rainfall events
- Promoted community engagement and self-help in considering Code of Practice measures
- Held community workshops to increase flood risk awareness and discuss sustainable approaches to mitigating risk



## NASA



Alpha Magnetic Spectrometer (AMS-02)  
Johnson Space Center, Houston, Texas, USA

Design and fabrication of the support structure, payload certification, and operational safety assessments

- More than 100,000 hours of shop work and more than 225,000 hours of office work without a single safety incident
- Safety analysis of the flight and ground operations of the entire payload
- 25,000 liters of Helium saved at Kennedy Space Center prior to launch
- Use of U.S. Air Forces as alternative to trucking materials results in reduced carbon footprint for project

# PROJECT GALLERY

## Projects from Client Features



### CITY OF AUSTIN



The Boardwalk Trail at Lady Bird Lake  
Austin, Texas, USA

Programming, public outreach, permitting, design, and engineering

- Materials have recycled content or were locally available
- Protect and restore processes and systems associated with site soil and vegetation
- Construction related impacts minimized in sensitive wetland areas
- LED lighting used for energy conservation
- Extensive community participation



### TRANSPORT SCOTLAND



Climate/Weather Patterns Study  
Scotland, United Kingdom

Climate model study, prediction of weather patterns, recommendations

- Examined climate models to determine how shifting weather patterns affect road system
- Ran weather projections with up-to-date data
- Identified increasing rainfall and flooding as greatest challenge
- Recommended strategies to address possible future weather events affecting Scottish roads



### NASA



Langley Research Center (LaRC)  
Hampton, Virginia, USA

Renewable Energy Usage

- 85 percent of steam produced for LaRC now generated by burning biomass instead of natural gas
- 50 million cubic feet of natural gas estimated to be saved annually
- 43.5 tons of solid waste expected to be diverted from landfills
- Feed water needed reduced an estimated 8.3 million gallons annually



### CHIESI FARMACEUTICI



Chiesi Farmaceutici Research  
& Development Centre  
Parma, Italy

Masterplan conceptualizing and programming, basic and detailed design, permitting, procurement and construction management, commissioning. Statutory roles: safety coordination in design and execution, responsibility role in construction management

- Jacobs 2011 President's BeyondZero® Excellence Award
- 2011 Facility of the Year Award in Sustainability Category from International Society for Pharmaceutical/Engineering (ISPE), INTERPHEX and Pharmaceutical Processing Magazine

# PROJECT GALLERY

## Projects from Client Features



### NEW LANARK TRUST



New Lanark Village  
New Lanark, Scotland, United Kingdom

Assessment and repair of walls and slopes

- UNESCO World Heritage
- Double-layer walls in some areas provide authentic and secure solution
- Buttresses along rock slopes have varying block sizes and orientations that mimic the surrounding rock.
- This area of New Lanark presents the same appearance it has for centuries but with all the safety of a modern site



### U.S. AIR FORCE



Cape Canaveral Lighthouse  
Cape Canaveral, Florida, USA

Site survey, soil remediation, artifact identification/preservation

- Survey to identify site features
- Soil sifted for historic artifacts
- Soil tilled and remixed, cleanup targets met
- All historic features documented, numerous artifacts recovered and cataloged



### U.S. ARMY CORPS OF ENGINEERS NEW ENGLAND DISTRICT



New Bedford Harbor Superfund Site  
New Bedford, Massachusetts, USA

Dredging of New Bedford Harbor

- Superfund site contaminated with toxic PCBs
- Cleanup efforts to remove and treat some 900,000 cubic yards of sediment
- Historic artifacts within the mud; documentation, preservation, and interpretation assistance provided to client



### NATIONAL GEOSPATIAL-INTELLIGENCE AGENCY AND U.S. ARMY CORPS OF ENGINEERS, BALTIMORE DISTRICT



NGA Campus East  
Fort Belvoir, Virginia, USA

Design services, including master planning and full architecture, engineering, interiors, site, civil, and landscape design as part of a joint venture with RTKL Associates Inc.

- LEED Gold Certified
- Winner of USGBC National Capitol Region Chapter Project of the Year,
- New Construction
- Sensitive landscape design: drought-tolerant species

# PROJECT GALLERY

## Projects from Client Features



### BRITISH ARMY



Waste Management Program  
London, England, United Kingdom  
*Image courtesy Purbeck District Council*

Waste management/Waste advisor

- Reduced waste management costs by nearly £1 million
- Jacobs waste advisor posted to six year placement with Army's facility team
- Developed Waste Directive, including: site responsibilities for waste management, specific recycling schemes, bin selection to maximize recycling performance, best practices for disposal specific to Army waste
- Developed Waste Strategy and Action Plan

**'We recognize a number of opportunities to bring real value to our customers. For example, a project manager working on one project recognized that pod equipment being salvaged at another location matched the manufacture and timing of systems we were supporting. Our equipment was getting older, so the project manager organized the transfer of equipment, resulting in a recognized savings of more than \$800,000 to our client.'**

Jim  
Jacobs, Vice President/Deputy General Manager  
Fort Walton Beach, Florida, USA



# Sustainability in Our World

Through the promotion of safe and sustainable practices we enhance the lives of the people we touch through our business.



The work we do goes beyond client projects: We are committed to, not only establishing sustainable practices in our own offices, but also to contributing to the communities in which we live and work.

### *Quarry Park, Calgary, Alberta, Canada*

Our office in Quarry Park is the first Jacobs office in Canada expected to become LEED certified, with the goal that these efforts be an

**‘One area that we consistently address is minimizing water usage. By reducing water usage, we are also reducing environmental impacts and saving energy used to move and store the water. These savings lower the initial costs of the investment as well as the ongoing operational costs.’**

Paul  
Jacobs, Director of Business Development  
Greenville, South Carolina, USA

example for our other Canadian offices. Quarry Park’s first initiative toward LEED certification is improving solid waste management efforts, followed by creating better sustainable purchasing practices.

The building is in its initial stages of becoming LEED certified as an Existing Building: Operation and Maintenance (EB: O&M). The initiative began with a request from the building owners and, with Jacobs management commitment, a joint effort initiative is underway. Some of the LEED credit requirements are tenant driven, which presents an exciting opportunity for those who work at Quarry Park to be creative in their green thinking and actions.

### *Sustainable Achievements to Date*

- Founded the Jacobs Calgary Green Team, which currently consists, not only of employees, but also of client employees who sit on site; the team is a driving force behind educating and encouraging Quarry Park tenants to act sustainably
- Partnership with waste-management vendor, BluPlanet
- Implementation of a waste-management pilot program wherein personal trash cans are replaced by three recycling units for organics, paper, and bottles and cans

# SUSTAINABILITY IN OUR WORLD

- Organized inspections and conducted positive audits
- Partnered with the office BeyondZero® employee team on initiatives such as the Safe and Active Commuting Program
- Approved intranet (JNet) page and newsletter template
- Provided bicycle stalls and showers at work to encourage employees to cycle to work
- Instituted employee wellness programs

## ***Planned Future Actions***

- Launch of the waste-management program within the entire Quarry Park office, followed by other Jacobs' offices in Calgary
- Recycling or donating of all existing garbage cans
- Removal of all paper and Styrofoam cups in lunch and coffee rooms; introduction of reusable travel mugs and water bottles
- Removal of Styrofoam containers in the cafeteria
- Sustainable purchasing of on-going consumables
- Reduction of mercury lamps
- Conducting of alternative transportation surveys; possible creation of incentive program
- Conducting of occupant comfort surveys
- Reduction in lighting and in electrical use after hours
- Sustainable-cleaning initiatives: materials, equipment, audits
- Education on sustainability through the Calgary Green Team
- Displaying of information about LEED and the sustainability efforts of the Calgary offices in the building lobbies and on cafeteria televisions to educate guests and employees

## ***Irvine Office Receives LEED® Platinum Certification for Commercial Interiors***

Our Irvine office at the Michelson Building has been awarded LEED® Platinum certification for Commercial Interiors: The highest level of certification available from the U.S. Green Building Council. As the designer and client, we had the unusual opportunity to implement our sustainable building practices in our business and office spaces.



**‘The Jacobs’ Irvine office’s LEED certification demonstrates tremendous green building leadership. The urgency of USGBC’s mission has challenged the industry to move faster and reach further than ever before, and the Jacobs’ Irvine office serves as a prime example of just how much we can accomplish.’**

Rick Fedrizzi  
President, CEO, & Founding Chair  
**U.S. GREEN BUILDING COUNCIL**

# SUSTAINABILITY IN OUR WORLD

## ***Sustainable Features***

Throughout the design of the 50,000-square-foot office environment, we used an open office workplace strategy, including the use of full-height and transom glass, maximizing natural daylight. Additional sustainable highlights include the purchase of Forest Stewardship Council (FSC) Certified Wood for the millwork and workstations; use of low-emitting paint, adhesives and carpet; implementation of sustainable education elements, including real-time energy usage; and use of LED signage and lighting controls. Jacobs designed the 19-story Michelson Building, located at 3161 Michelson Drive in Irvine, Calif.

## ***JHealth Celebrates First Year***

2012 marks the first anniversary of JHealth, the health and wellbeing program in our Australian offices.

A key health-focused component of our BeyondZero® program across Jacobs' Australian operations, we launched JHealth with the purpose of helping our people live healthy lifestyles through support and education.

We facilitated more than 1,000 one-on-one health sessions and conducted 18 "toolbox"-style health-awareness sessions across all Australian offices.

As part of JHealth, we invite trained health professionals to visit offices regularly, providing health assessments, advice, and information via short meetings, lunch-and-learn presentations, and materials available on the Internet.

Confidential one-on-one sessions are available for employees on an ongoing basis.

## ***Individual Assistance***

At the first one-on-one session, a range of health assessments are undertaken that may include checks on blood pressure, blood glucose, resting heart rate, cholesterol, body mass index, waist to hip ratios, peak flow measurements, diabetes risk assessments; as well as general health questionnaires.

All of this information can be used for personal health goal-setting. The data recorded within the session is then available to each employee via a secure, personalized website section. Employees can track progress throughout the

year through graphical displays that visually demonstrate health improvements over time.

With follow up one-on-one sessions, employees check their progress against goals. Participation in the program is voluntary and open to staff and contractors free of charge.

## ***Drive Less Initiative***

Our Drive Less initiative focuses on improving safety, reducing and eliminating motor vehicle incidents, reducing our miles driven, and reducing many of the negative environmental impacts associated with driving.

To avoid driving while on company business, we ask employees to evaluate all alternatives and options prior to driving a vehicle. Options include: conference calling, WebEx conferencing, video conferencing, public transportation, carpooling, taxi, walking, or bicycling.



When traveling, we recommend employees choose lodging that is close to their destination, and also suggest they consider nearby restaurants and other services. Staff are further encouraged to adopt the Drive Less philosophy through transportation fairs held in various offices. The fairs relay information about travel options to and from offices.

Drive Less plans are currently in place many of our offices across the country. Where plans are complete, program information is available on the local office's page on our intranet site. As plans are implemented in more of our offices, we anticipate a reduction in motor-vehicle incidents and a reduction of our carbon footprint.



# SUSTAINABILITY IN OUR WORLD

## ***Our Drive Less Plan Provides***

- Easy access to public transportation information and links to pages on bus, train, light rail, and subway transit schedules on the local office pages of Jacobs' intranet site
- Information about local taxi services and shuttles, the nearest hotel and lodging options, medical facilities, and pharmacies
- Encouragement and support from local management, including coordination with the local work location to improve options, such as placement of a safe bicycle rack

## ***Print Sustainability Statement 2012***

Our print sustainability efforts include embracing new processes, encouraging behavioral change, and adopting efficient equipment to decrease physical printing.

### **2011 RESULTS FOR PRINT REDUCTION PROGRAM**



33 million pages (66,000 reams)



3,960 trees



165 tons



25% energy use for new devices compared to replaced devices

## ***Expanding the Program; Clients Included***

Building on the continued success of our global print program we have expanded to even more Jacobs offices, including all of our recent acquisitions. We have also targeted client sites that are expected to contribute to our value-add initiative, both on fiscal savings and sustainability.

Our target methodology has continued in 2012 in that we plan to continue to reduce committed printed volumes by increasing duplex printing, removing inefficient devices, and moving to shared printing. Our duplex global average per month is now 1.4 million on a reduced print volume of 14 million pages.

## ***By the Numbers***

Our paper savings for 2011 reached 33 million pages, equating to 66,000 reams (165 tons and 3,960 trees saved) in production, which directly impacts CO<sub>2</sub> emissions and effluent output. Additionally, our paper supply is recycled or comes from sustainable sources.

The energy consumption of every new print device is only about 25 percent of the consumption of older devices, and the devices themselves all comply with international standards on materials and sustainability codes.



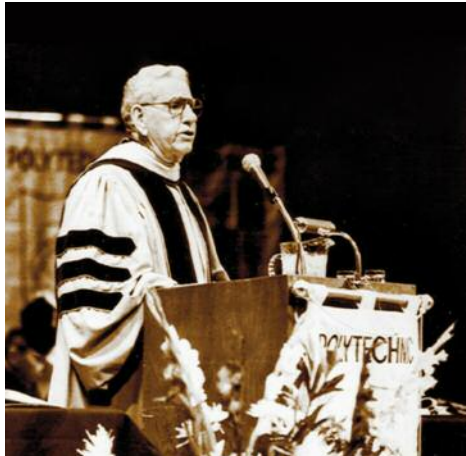
Established in 1993, Jacobs College offers educational opportunities to our employees or targeted leadership and management development. By educating our employees and enhancing their leadership and managerial skills, we enable them to represent our company in the best way possible.

Jacobs College immerses participants in a learning atmosphere that leads to a better understanding of our core values and improves their ability to serve our clients, and to train and to lead others. Through a deeper understanding of our core values, these employees perpetuate our commitment to sustainable development.

## ***Goals of Jacobs College***

- Improve leadership talent
- Share our organization's culture and success factors
- Institutionalize success by passing on lessons learned
- Increase our ability to provide greater value to our clients

# SUSTAINABILITY IN OUR WORLD



## *Jacobs Foundation Scholarship*

We introduced the Dr. Joseph J. Jacobs Global Scholarship Program in 2009 in memory of our founder, Dr. Joseph J. Jacobs. His vision, leadership, and commitment to our business helped make this company one of the world's largest and most diverse providers of technical, professional, and construction services.

Over the last two years, the Jacobs Engineering Foundation has awarded 60 academic scholarships of \$3,000 (U.S.) each from more than 1,000 applications received. We are delighted to offer this opportunity again in 2012 and look forward to many more applicants.

The program is independently administered by Scholarship Management Services, a division of Scholarship America. Scholarship America is a nonprofit educational support and student aid service organization located in the United States.

## *Charitable Donations for 2011 reach \$1.1 million*

To make it easier for Jacobs employees to give to the charitable organization of their choice, we recently implemented the Jacobs online charitable donation system, a solution that eliminated the need for thousands of paper forms. Now, with a few simple clicks of the computer mouse, employees can give to their local United Way or to another non-profit organization of their choosing. Many Jacobs

employees choose to support their local communities through United Way and have done so for many years.

In 2011 we added two additional charitable federations to our charitable donation system: America's Charities, representing organizations not typically supported by the United Way; and Global Impact, a U.S. based charity that supports international relief efforts. Our goal with these additions is to have our charitable giving system reflect the diverse interests of our employees.

Every year we reach more communities through donations to United Way or other non-profit organizations. In 2011, employees donated to 63 different United Ways, representing hundreds of communities and non-profit organizations across the United States. Total donations to United Way, America's Charities, and Global Impact totaled \$1.1 million.



## **HOMEWALK: THE JACOBS TEAM FOR THE UNITED WAY OF GREATER LOS ANGELES, CALIFORNIA, USA**

HomeWalk is a fundraising event for the homeless in Los Angeles County. All proceeds go directly back to the community, supporting permanent solutions to end homelessness. Over the past 4 years, HomeWalk has mobilized 18,000 walkers, raised \$1.7 million, and funded organizations that have moved 9,000 people into permanent housing.

# SUSTAINABILITY IN OUR WORLD

## *Sustainable Solutions Raises More Than \$3,000 for WaterAid*

Last September a team from our Sustainable Solutions business unit in the United Kingdom competed in the Clyde Marine Challenge 2011 to raise funds for WaterAid. Aboard the yacht 'Island Air,' the Sustainable Solutions team of seven volunteers battled stormy seas to win the main race of the weekend, which took the fleet around the magnificent coastal scenery of the Firth of Clyde and through the beautiful Kyles of Bute.

More importantly, the team lifted the CIWEM Sponsorship Trophy, awarded to the crew who raised the most funds, over \$3,000, for WaterAid — a charity that transforms lives by improving access to safe water, hygiene, and sanitation in the world's poorest communities. Over the last five years the Clyde Marine Challenge has raised almost £50,000 for WaterAid. A Jacobs employee in our Glasgow office takes a lead role in organizing the event each year. ■



### WATERAID

<http://www.wateraidamerica.org/>

WaterAid's mission is to transform lives by improving access to safe water, hygiene and sanitation in the world's poorest communities.

**'Serving not only as the representative, but also as the partner of our key client in Morocco, we are managing the client's strategic industrial expansion program which includes the management of their Health, Safety and Environmental (HSE) program during the construction phase. Through aligning the local contractors with the philosophy that safety and productivity go hand-in-hand on a job site, we have accomplished major breakthroughs in helping our client to achieve cost-effective and sustainable solutions.'**

Esber  
Jacobs, Deputy General Manager of Operations & Field Services  
Casablanca, Morocco



# Unshakable Sustainability

**O**ur core values are the unshakable foundation that furthers our growth as a business as well as our commitment to sustainable development. Sustainability is ingrained in our projects and business practices as well as in our people and our culture. The many and varied ways we help our clients attain their sustainable project goals allow you to see our philosophy in action.

**We See Sustainability Differently.**

# GRI Index

GRI Criterion #	Description	Section
<b>Strategy &amp; Analysis</b>		
1.1	Statement from the most senior decisionmaker (e.g., CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy.	Executive Letter
1.2	Description of key impacts, risks, and opportunities.	Executive Letter
<b>Organizational Profile</b>		
2.1	Name of the organization.	Appendix
2.2	Primary brands, products, and/or services.	Appendix
2.4	Location of organization's headquarters.	Appendix
2.5	Number of countries where the organization operates.	Appendix
2.6	Nature of ownership and legal form.	Appendix
2.7	Markets served (including geographic breakdowns, sectors served, and types of customers/beneficiaries).	Appendix
2.8	Scale of the reporting organization.	Appendix
2.9	Significant changes during the reporting period regarding size, structure, or ownership.	Appendix
2.10	Awards received in the reporting period.	
<b>Report Parameters</b>		
3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	Appendix
3.2	Date of most recent previous report (if any).	Appendix
3.3	Reporting cycle (annual, biennial, etc.).	Appendix
3.4	Contact point for questions regarding the report or its concerns.	Appendix
3.5	Process for defining report content.	Appendix
3.6	Boundary of the report.	Appendix
3.7	State any specific limitations on the scope or boundary of the report.	Appendix
3.8	Basis for reporting on joint ventures, subsidiaries, leased facilities, outsourced operations, and other entities that can significantly affect comparability from period to period.	Appendix
3.9	Data measurement techniques and the basis of calculations.	Appendix

# GRI INDEX

GRI Criterion #	Description	Section
3.10	Explanation of the effect of any re-statements of information provided in earlier reports, and the reasons for such re-statement.	Not Applicable
3.11	Significant change from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	No changes
3.12	Table identifying the location of the Standard Disclosures in the report.	GRI Index
3.13	Policy and current practice with regard to seeking external assurance for the report.	Appendix
<b>Governance, Commitments, and Engagement Governance</b>		
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.2	Indicate whether the Chair of the highest governance body is also an executive officer.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.3	For organizations that have a unitary board structure, state the number of members of the highest governance body that are independent and/or non-executive members.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.5	Linkage between compensation for members of the highest governance body, senior managers, executives, and the organization's performance.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.7	Process for determining the qualifications and experience of the highest governance body for guiding the organization's strategy on economic, environmental, and social topics.	Appendix; <a href="http://www.jacobs.com">www.jacobs.com</a>
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance.	Appendix
4.9	Procedures for the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance.	Appendix <a href="http://www.jacobs.com">www.jacobs.com</a>
4.10	Processes for evaluating the highest governance body's own performance.	Appendix <a href="http://www.jacobs.com">www.jacobs.com</a>
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	Appendix
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	Appendix
4.13	Memberships in association and/or national/international advocacy organizations.	Appendix
4.14	List of stakeholder groups engaged by the organization.	Appendix
4.15	Basis for identification and selection of stakeholders with whom to engage.	Appendix

# GRI INDEX

GRI Criterion #	Description	Section
4.16	Approaches to stakeholder engagement, including frequency of engagement.	Appendix
4.17	Key topics and concerns that have been raised through stakeholder engagement, and how the organization has responded to those key topics and concerns, including through its reporting.	Appendix
<b>Economic</b>		
<b>Economic Performance</b>		
EC1	Economic value generated and distributed, including revenues, operating costs, employee compensation, donations and other community investments, retained earnings, and payments to capital providers and governments. (Core)	Appendix
EC3	Coverage of the organization's defined benefit plan obligations. (Core)	Appendix
EC4	Significant financial assistance received from government. (Core)	\$0
<b>Market Presence</b>		
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation. (Core)	Partial Report, Appendix
<b>Indirect Economic Impacts</b>		
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement. (Core)	Appendix
<b>Environmental</b>		
<b>Materials</b>		
EN1	Materials used by weight or volume. (Core)	Appendix
EN2	Percentage of materials used that are recycled input materials. (Core)	Appendix
<b>Energy</b>		
EN5	Energy saved due to conservation and efficiency improvements. (Additional)	Appendix
EN6	Initiatives to provide energy-efficient or renewable energy-based products and services, and reductions in energy requirements as a result of these initiatives. (Additional)	Our Processes & Tools; Appendix
EN7	Initiatives to reduce indirect energy consumption and reductions achieved. (Additional)	Our Processes & Tools; Appendix
<b>Biodiversity</b>		
EN11	Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas. (Core)	None
<b>Emissions, Effluents, and Waste</b>		
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved. (Additional)	Our Processes & Tools; Appendix

# GRI INDEX

GRI Criterion #	Description	Section
EN23	Total number and volume of significant spills. (Core)	None
<b>Products and Services</b>		
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation. (Core)	Our Processes & Tools; Appendix
<b>Compliance</b>		
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations. (Core)	\$0
<b>Social Performance: Labor Practices &amp; Decent Work</b>		
<b>Employment</b>		
LA1	Total workforce by employment type, employment contract, and region. (Core)	Appendix
LA2	Total number and rate of employee turnover by age group, gender, and region. (Core)	Appendix
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations. (Additional)	Appendix
LA4	Percentage of employees covered by collective bargaining agreements. (Core)	Appendix
<b>Occupational Health and Safety</b>		
LA6	Percentage of total workforce represented in formal joint management-worker health and safety committees that help monitor and advise on occupational health and safety programs. (Additional)	Appendix
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region. (Core)	Wh/indemnity worldwide for CY2011: 1,875,500 60 indemnities 112,533,000 workhours
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases. (Core)	Appendix
<b>Training and Education</b>		
LA10	Average hours of training per year per employee by employee category. (Core)	Appendix Our Processes & Tools
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings. (Additional)	Sustainability in Our World
LA12	Percentage of employees receiving regular performance and career development reviews. (Additional)	Sustainability in Our World
<b>Diversity and Equal Opportunity</b>		
LA13	Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity. (Core)	Partial Report; Appendix



# GRI INDEX

GRI Criterion #	Description	Section
<b>Investment and Procurement Practices</b>		
HR1	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening. (Core)	Appendix
HR2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken. (Core)	Appendix
HR3	Total hours of employee training on policies and procedures concerning aspects of human rights that are relevant to operations, including the percentage of employees trained. (Additional)	Appendix
<b>Non-Discrimination</b>		
HR4	Total number of incidents of discrimination and actions taken. (Core)	None
<b>Child Labor</b>		
HR6	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor. (Core)	Appendix
<b>Forced and Compulsory Labor</b>		
HR7	Operations identified as having significant risk for incidents of forced or compulsory labor, and measures to contribute to the elimination of forced or compulsory labor. (Core)	Appendix
<b>Indigenous Rights</b>		
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken. (Additional)	None
<b>Social Performance: Society</b>		
<b>Corruption</b>		
SO2	Percentage and total number of business units analyzed for risks related to corruption. (Core)	Appendix
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures. (Core)	Appendix
SO4	Actions taken in response to incidents of corruption. (Core)	Appendix
<b>Public Policy</b>		
SO5	Public policy positions and participation in public policy development and lobbying. (Core)	Appendix
<b>Anti-Competitive Behavior</b>		
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes. (Additional)	None
<b>Compliance</b>		
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations. (Core)	\$0

# GRI INDEX

GRI Criterion #	Description	Section
<b>Products and Service Labeling</b>		
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction. (Additional)	Appendix
<b>Marketing Communications</b>		
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship. (Core)	Appendix
PR7	Total number of incidents of non-compliance with regulations and voluntary codes concerning marketing communications, including advertising, promotion, and sponsorship by type of outcomes. (Additional)	None
<b>Customer Privacy</b>		
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data. (Additional)	None
<b>Compliance</b>		
PR9	Monetary value of significant fines for non-compliance with laws and regulations concerning the provision and use of products and services. (Core).	\$0

The following lists the GRI criterion that we have determined are either not material to our stakeholders, or we are not prepared to report on at this time:

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EC2, EC5, EC6, EC9, EN3, EN4, EN8, EN9, EN10, EN12, EN13, EN14, EN15, EN16, EN17, EN19, EN20, EN21, EN22, EN24, EN25, EN27, EN29, EN30, LA5, LA9, LA14, HR5, HR8, SO1, SO6, PR1, PR2, PR3, PR4

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# Appendix

## A. ORGANIZATIONAL PROFILE

Jacobs Engineering Group Inc. is one of the world's largest and most diverse providers of technical, professional, and construction services, including all aspects of architecture, engineering, and construction, operations and maintenance, as well as scientific and specialty consulting. We serve a broad range of companies and organizations, including industrial, commercial, and government clients across multiple markets and geographies.

Our global network includes more than 170 offices in more than 25 countries, with operations in North America, South America, Europe, the Middle East, India, Australia,

Africa, and Asia. We were founded in 1947 and our headquarters is in Pasadena, California.

Jacobs' common stock has been publicly held since 1970 and is currently listed on the New York Stock Exchange under the trading symbol JEC. Our 2011 revenue is 10.4 billion.

For more information about Jacobs' sustainable practices or to comment on this report, please contact us at: [contactus@jacobs.com](mailto:contactus@jacobs.com).

### Countries Where We Have a Presence

Australia	India	Saudi Arabia
Belgium	Ireland	Scotland
Canada	Italy	Singapore
Chile	Mexico	South Africa
China	Morocco	Spain
Czech Republic	Netherlands	Sweden
England	Northern Ireland	United Arab Emirates
Finland	Oman	United States of America
France	Peru	Wales
Germany	Poland	
Greece	Puerto Rico	



### Market Sectors

Aerospace & Defense	Environmental, Water & Wastewater	Mission-Critical & High-Tech Facilities	Power & Utilities
Automotive & Industrial	Food, Beverage, Forest & Consumer Products	Oil & Gas	Refining & Petrochemical
Buildings	Mining & Minerals	Pharmaceuticals & Biotechnology	Transportation
Chemicals			

## B. SUSTAINABLE SERVICES

### EPCM

BREEAM / LEED  
 CEEQUAL  
 Master planning  
 Sustainability assessments  
 Life cycle reviews  
 Energy efficiencies  
 Materials selection (incl. carbon)  
 Sustainable design  
 Commissioning

### Corporate Responsibility

Verification  
 Auditing  
 Management systems  
 Waste minimization

### Carbon Management

Carbon footprinting and accounting  
 Sustainable energy auditing  
 Carbon strategy development  
 Low and zero carbon technology  
 GHG certification and compliance

### Public Sector

Strategy and policy  
 SD assessments  
 Environmental impact studies  
 Reporting and measurement  
 Procurement  
 Community / stakeholder consultation

### Climate Change

Reporting  
 Design impacts on developments  
 Planning  
 Risk assessments  
 Adaptation advice  
 Scenario planning

# APPENDIX

## C. REPORT PARAMETERS

### **Reporting Period/Most Recent Report/Report Cycle & Boundaries/Point of Contact**

In this Sustainability Report we utilize the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines. We report only on the G3 indicators that were relevant and measurable for our business operations in 2011. The report is inclusive of data from Jacobs and all related entities, with no limitations. See our investor relations section at [www.jacobs.com](http://www.jacobs.com) for more information. This report has not been audited by a third party (e.g., GRI, etc.). Prior to our 2012 report, our most recent report was published in 2011. We publish a Sustainability Report annually. Content for this report was defined based on GRI requirements and the needs of our stakeholders. For more information about Jacobs please contact: [contactus@jacobs.com](mailto:contactus@jacobs.com).

### **Data Measurement Techniques & the Basis of Calculations**

Jacobs' data measurement techniques and basis of calculations vary according to the entity to which we report. We adhere to all rules and regulations for the various agencies and governing bodies to which we report on topics, including safety, earnings, and more. Additional data and calculation basis vary by specific tool, science, or methodology used, which is dependent on the client, the project, and the project requirements.

## D. BUSINESS CONDUCT & ETHICS

### **Corporate Policy Concerning Business Conduct, Integrity, & Ethics**

Our founder, Joseph J. Jacobs, once wrote that honesty has remained a constant driving force of our success. He believed our principles of business conduct sustain our company culture and are recognized and awarded by our clients and by the market system. As he wrote in our 50th anniversary booklet, "Our high standards provide the structure that will bridge past success with a bright future."

From the day they are hired, Jacobs employees are given the tools they need to understand and adhere to our ethical standards. New employee orientation includes foundation training for all employees on our Business Code of Conduct. Each year our staff employees are required to review the Business Code of Conduct and reaffirm their understanding. Additional supplemental training is required to be completed every other year by our supervisors/managers and other employees depending on their role in the company.

See our Business Conduct Policy on our investor relations page at [www.jacobs.com](http://www.jacobs.com) for more information.

### **Training**

Jacobs also established a Global Ethics and Compliance training initiative program to further help employees understand the legal and ethical standards that must be upheld. Our organization-wide program is designed to provide a strong learning foundation and supplemental training, such as those conducted through regional training efforts, at our Annual Business Meeting, and through Jacobs College. Since 2005, Jacobs College has offered senior leader-led training with modules dedicated to ethics. Training is highly interactive, leveraging actual company scenarios.

Due to our many geographic locations around the world, the majority of our training is delivered through on-line learning. The training is enhanced with in-person learning events.

The following concepts are woven throughout all on-line compliance courses:

- Observance of moral and ethical standards of society and fair dealing
- Reporting and resolving suspected irregularities
- Corporate governance
- Jacobs Integrity Hotline

Jacobs Integrity Hotline is a worldwide reporting line answered 24 hours a day, seven days a week by a professional independent contractor. Calls are confidential and can be anonymous.

We take ethics very seriously. Violation of company policies have severe consequences, including termination of employment.

All Jacobs employees and business partners are expected to be guided by the following principles as they carry out their responsibilities:

- Loyalty
- Compliance with applicable laws
- Observance of ethical standards
- Conflict of interest
- Communication

In addition to the Business Code of Conduct Reaffirmation, Jacobs offers additional ethics and compliance courses, including:

- Procurement Integrity
- Information Security
- Insider Trading
- Conflicts of Interest
- Global Bribery and
- Corruption Awareness

Jacobs and its affiliates and subsidiaries have always followed the highest principles of business conduct, integrity, and ethics. That is the reputation we now enjoy. We intend to keep it. Our corporate policy concerning business conduct, integrity, and ethics for the United States and internationally is available on our public web site: [www.jacobs.com](http://www.jacobs.com).

## E. PUBLIC FILINGS

### **SEC Regulations**

Jacobs is a publicly traded company on the New York Stock Exchange, (NYSE: JEC) and we are regulated by the U.S. Securities and Exchange Commission (SEC). For additional information about Jacobs, please see our 2011 Form 10-K and other filings available on the investor relations section of our public website [www.jacobs.com](http://www.jacobs.com).

## F. ORGANIZATIONAL PROFILE

### **Significant Changes in Size, Structure, & Ownership**

Jacobs acquires a 70 percent interest in Consulting Engineering Services (India) Private Limited (CES), a 2,000-person firm headquartered in New Delhi, India and founded in 1969. The combination nearly doubles Jacobs' existing resources and capabilities in India to more than 4,500 employees and expands its presence in other regions in Asia and the Middle East.

Jacobs acquires KlingStubbins, a 500-person firm headquartered in Philadelphia, Pa. founded in 1949. The firm enhances Jacobs' capabilities in design, planning, architecture, engineering and interiors with specializations in higher education, research and development, laboratory research and development, and in mission critical facilities such as intelligence, cyber security, and corporate data centers.

Jacobs acquires Unique World, an 80-person IT services firm headquartered in Sydney, Australia. Founded in 2000, the firm specializes in information and knowledge management, and allows Jacobs to expand our services with existing customers such as mining and minerals clients, the Ministry of Defense, and other public sector agencies in Australia.

During the course of the year, John Jumper resigned from the Board of Directors, and Tom Niles did not stand for re-election. Both made many significant contributions to our growth and performance during their tenure on the board.

# APPENDIX

## G. GOVERNANCE, COMMITMENTS, & ENGAGEMENTS

### **Membership in Associations & Advocacy Organizations**

Listed below are just some of the principal associations with which Jacobs is involved or holds membership:

- AACE International: The Authority for Total Cost Management
- Airport Consultants Council (ACC)
- Airport Ground Transportation Association (AGTA)
- Airports Council International, North America (ACI)
- Airport Minority Advisory Council (AMAC)
- American Association of Airport Executives (AAAE)
- American Concrete Institute (ACI)
- American Council of Engineering Companies
- American Institute of Architects (AIA)
- American Institute of Steel Construction (AISC)
- American Planning Association (APA)
- American Public Works Association (APWA)
- American Segmental Bridge Institute (ASBI)
- American Society of Civil Engineers (ASCE)
- American Society of Highway Engineers (ASHE)
- American Society of Landscape Architects (ASLA)
- American Water Works Association (AWWA)
- American Railway Engineering (AREMA)
- ASHRAE
- Asian American Architects and Engineers Association (AAa/e)
- Associated Builders and Contractors, Inc. (ABC)
- Construction Industry Advisory Council
- Construction Industry Round Table (CIRT)
- Construction Users Round Table (CURT)
- Corporate Executive Board (CEB)
- Federal Bar Association (FBA)
- International Association of Foundation Drilling (ADSC)
- International District Energy Association (IDEA)
- International Council of Shopping Centers (ICSC)
- National Groundwater Association (NGWA)
- National Society of Professional Engineers (NSPE)
- National Council for Public Private Partnerships (NCP3P)
- PCI International Inc.
- Procurement Executives
- Project Management Institute (PMI) Group
- Real Estate Council
- Retail Design Institute
- Risk Management Society (RIMS)
- Safety Council
- Society of American Military Engineers (SAME)
- The Urban Land Institute (ULI)
- United States Green Building Council (USGBC)
- Water Environment Federation (WEF)
- Water Reuse Association

### **List of Stakeholder Groups Engaged by the Organization**

At Jacobs we are committed to being open and transparent for our stakeholders. Our stakeholders are, inclusively, our clients, employees, shareholders, subcontractors, suppliers, business associates, the communities where we work and live, and society at large.

#### **Stakeholder Engagement**

We engage in open and transparent communication with our stakeholders in various ways at many levels every day. As required by the GRI guidelines, the following information details the ways in which we engage with specific stakeholder groups. The basic tenets of our core values — people, relationships, growth — provide the structure for all of our engagements.

**Our Clients** — We are a relationship-based company. Our Client Expectation and Client Satisfaction Surveys are a formal process that allow us to go beyond the traditional expectations of safety, cost, and schedule, to truly understand our clients' expectations. The survey process creates a unique venue and opportunity for our employees to align with clients on sustainability issues, and to determine a course of action. We measure ourselves against meeting client expectations and pinpoint where we can improve. Our resulting improvements are not just words, but suggestions put into action. Over the years our Client Satisfaction Survey scores have increased, and we are currently more than 91 percent. We are proud of this accomplishment and driven to continue to improve these scores year after year.

**Our Investors** — We are committed to transparency, and communicate regularly with our shareholders and other contacts in the world financial arena. As a publicly traded company on the New York Stock Exchange, we are regulated by the U.S. Securities and Exchange Commission (SEC). More information on our responsibilities to our shareholders can be found on [www.jacobs.com](http://www.jacobs.com).

**Our Employees** — Due to the size and geographic diversity of our company, it is vital that we actively engage with our employees. We do this through a variety of methods, from face-to-face interaction, to a robust intranet site, to training programs and all-employee e-mails.

#### **Examples of Specific Activities**

Our People Metrics employee opinion survey, conducted bi-annually, gathers employees' perceptions about their work experience. In 2011, more than 29,000 employees participated in our People Metrics survey. We have found from our survey results that we have a highly engaged workforce and strong survey results as compared with other companies in the professional service area.

Our Annual Business Meeting brings together a mix of our top leaders at the beginning of each fiscal year. Fiscal results for the previous year and goals for the next 18 months are reviewed.

Creation of a CEO Annual Video, which is distributed throughout the company. Jacobs' Professional Women's Collaborative, created in 2006, provides women the opportunity to build multinational networks, develop leadership and technical skills, and enhance their careers at Jacobs. We also maintain a Women's Collaborative page on JNet, our internal Web site. This page includes an "Employee Spotlight," a "Women on the Move" highlight feature, and other resources.

#### **Training: Average hours of training per employee = 11.76**

Jacobs is currently implementing a Learning Management System (LMS) as a module within Oracle HR to track employee training. Using surveys of each operating unit, it is our estimate that employees complete an average of 11.76 hours of training internally per year.

# APPENDIX

## TRAINING & DEVELOPMENT RELATED EXPENSES FOR FY2011

EXPENSE	AMOUNT
Salaries (wages while attending training)	\$9,120,696
Employee Training (expense for training)	\$7,240,529
Tech & Management Conferences	\$3,415,076
Professional Dues & Memberships	\$3,225,824
Tuition Assistance	\$788,958
Corporate T&D Department	\$1,024,700
<b>Total</b>	<b>\$24,815,783</b>

- FY11 hours of training on human rights: 17,535 hours completed by 16,728 individuals (37% of staff employee population)
- Preventing Workplace Harassment: 11,782 hours completed by 11,310 individuals
- Preventing Workplace Violence: 5,083 hours completed by 5,083 individuals
- Creating an Inclusive Environment (module of Management Leadership Course): 670 hours completed by 335 individuals
- Employees may receive life transition support through our Employee Assistance Program

In February 2011, through Towers Watson we conducted our People Metrics survey where employees share their perceptions regarding their working experience at Jacobs. One of the survey categories is "Career Development & Training" with four items:

- "I believe I have the opportunity to learn and grow at Jacobs"
- "Jacobs provides people with the necessary information and resources to manage their own careers effectively"
- "I think Jacobs is doing a good job of retaining its most talented people"
- "I am given sufficient access to training opportunities"

*Note: Our next People Metrics survey is scheduled in February 2013.*

We follow the laws, rules, and regulations of every place and country in which we work. Our core values reinforce our standards of ethical, humane treatment of all people. We take action every day to ensure a safe, inclusive, and engaging work environment for our employees, our clients, and our stakeholders. Therefore, we have developed programs and processes that help us track and improve our policies on diversity, safety, the environment, and human rights wherever we work around the globe.

### Human Rights & Labor Laws

All employees are expected to comply with all laws, rules, and regulations of all U.S. and non-U.S. governmental entities, and other private and public regulatory agencies. Adhering to human rights and labor laws is of great importance to us and we expect the companies we associate with to do the same.

Human rights and labor are the most prominent prequalification criteria of our partner and subcontractor evaluation and selection process. We do not work with any

company that does not respect the United Nations' Universal Declaration of Human Rights. All partners and subcontractors must also adhere to the international labor conditions defined by the International Labor Organization (ILO). We screen 100 percent of prospective partner and subcontractor companies before entering into any contract. This includes a review of ethics, human rights regulations, labor conditions, safety standards, quality measures, environmental policy, cost, and schedule. If a company does not qualify on any of these terms, our policy deems we do not work with that company.

Our prequalification process for vendors and suppliers is the same as the process for partners and subcontractors. For qualified suppliers with whom we enter into a signed contract, a monitoring system goes into effect.

Our employees are trained in all applicable laws, and our inspectors and project personnel serve as our "ears on the ground," to monitor all aspects of the vendor's initial qualification.

### Diversity

As a global industry leader, Jacobs employs a dynamic mix of people to create the strongest company possible. Jacobs' policy forbids discrimination in employment on the basis of age, culture, disability, education, gender, region of national origin, sexual orientation, physical appearance, race, or religion. We are an inclusive and diverse company with people of all different backgrounds, experiences, cultures, styles, and talents. We enter into partnerships with various minority and women's professional groups, including the Society of Women Engineers, the National Society of Black Engineers, the Society of Hispanic Professional Engineers, and the National Action Council for Minorities in Engineering.

Diversity is a key factor in the way we interact with our vendors, and is a required element in our procurement decision matrix. Our Jacobs Global Supplier Database (JGSD) of suppliers and contractors serves as a repository for all data and provides the information to manage our ongoing relationship development with small and diverse companies.

### Anti-Corruption

- Classroom Anti-Corruption Training led by Compliance Officer: 23 classes totalling 526 people
- On-line Anti-Corruption Policy Training: At the time of this report 44% of employees have completed this training for 2012
- Procurement Integrity (1-hour, on-line course): Last completed in 2010 Scheduled in 2012 for approximately 3,000 individuals
- Global Bribery & Corruption Awareness (1-hour, on-line course): Last completed in 2010 Scheduled in 2012 for approximately 3,000 individuals
- Global Competition (1-hour, on-line course): Last completed in 2010 Scheduled in 2012 for approximately 3,000 individuals
- Ethics: 1,539 hours completed by 903 individuals
- Jacobs College, Ethics: 2.5 hours completed by 244 leaders
- Annual Business Meeting, Ethics Workshop: 1.25 hours completed by 343 senior leaders
- Professional Women's Conference, Ethics Workshop: 2 hours completed by 140 leaders
- Jacobs Future Network Weekend, Project Ethics: 1.25 hours completed by 176 early-career professional employees

# APPENDIX

## H. ECONOMIC

### Economic Performance

Economic Value Generated and Distributed, Including Revenues, Operating Costs, Employee Compensation, Donations and Other Community Investments, Retained Earnings, and Payments to Capital Providers and Governments

Please see our Annual Report (Form 10-K) at [www.jacobs.com](http://www.jacobs.com).

### Market Presence

#### Procedures for Local Hiring & Proportion of Senior Management Hired from the Local Community at Significant Locations of Operation

While laws on discrimination may vary from country to country, it is the policy of the Company that there shall be no discrimination in employment on the basis of age, culture, disability, education, gender, regional or national origin, sexual orientation, physical appearance, race, or religion in any of its offices worldwide. The Company is committed to ensuring fair employment, including equal treatment in hiring, promotion, training, compensation, termination, and disciplinary action. In compliance with U.S. law, the Company also maintains a formal affirmative action program for all of its U.S. operations. Jacobs does place a high value on global diversity and has created a global recruitment campaign to encourage such diversity.

With fair employment and compliance with country and local law in mind, it is common practice to give preference to candidates in close proximity to the job location, particularly when resources may not be allocated or available for relocating the candidate to the job location.

### Indirect Economic Impacts

Development and Impact of Infrastructure Investments and Services Provided Primarily for Public Benefit Through Commercial, In-Kind, or

### Pro Bono Engagement

Jacobs' infrastructure business includes: transportation and rail, aviation, water infrastructure, and telecommunications services delivered worldwide. We have full life-cycle capabilities, including planning, environmental, design, consulting, engineering, design-build, construction, and program management services.

## I. SOCIAL PERFORMANCE

### Labor Practices and Decent Work

Voluntary Turnover Rate for the 2011 Fiscal Year was about 9.89 percent globally.

Percentage of Employees Covered by Collective Bargaining Agreements

In Canada, the United States, and the United Kingdom, approximately 8,180 employees (13.5 percent) are covered by a collective bargaining agreement.

In several other countries where we have operations, employees are covered by their respective national labor agreements.

## J. SOCIAL PERFORMANCE: PRODUCT RESPONSIBILITY

### Product Responsibility, Programs for Adherence to Laws, Standards, & Voluntary Codes Related to Marketing Communications, Including Advertising, Promotion, & Sponsorship

Jacobs is an international provider of professional services. The core of our business model is our relationship-based philosophy. We do very limited advertising and promotion. When we do engage in marketing activities, we adhere to the strict standards in our Business Code of Conduct. It is Jacobs' policy that any marketing materials featuring our clients are fully reviewed and approved by the client. Usage rights of all materials are always verified and obtained.

### TOTAL WORKFORCE BY EMPLOYMENT TYPE, CONTRACT, AND REGION

CONTINENT	STAFF Including contract/agency	CRAFT/SKILLED Including contract/agency
North America	28,017	12,303
South America	460	N/A
Europe	10,461	714
Asia (includes Middle East)	7,189	N/A
Australia	956	N/A
Africa	101	N/A
Antarctica	N/A	N/A
<b>Totals</b>	<b>47,184</b>	<b>13,017</b>

### TOTAL WORKFORCE BY GENDER & AGE DISTRIBUTION

DEMOGRAPHIC	WORKFORCE
<b>Gender</b>	
Female	24%
Male	76%
<b>Age Groups</b>	
Younger than 30 years old	13%
30-50 years old	49%
Older than 50 years old	38%

# APPENDIX

## K. 2011 ZERO ACCIDENT AWARD WINNERS

The Global Executive Health, Safety and Environment Committee is pleased to recognize the projects and offices that completed calendar year 2011 without experiencing any injuries.

Forty-two of our projects achieved this goal and the consecutive work hour threshold of 200,000 work hours without an E-1, representing over 22.2 million consecutive accident-free work hours in self perform and subcontract environments.

Twenty-seven of our offices achieved this goal, twice the number from last year, and the consecutive work hour threshold of 1,650,000 work hours without an E-1, representing over 62.3 million consecutive accident-free work hours. Collectively, the winners of the 2011 Zero Accident Award worked more than 84.5 million consecutive accident-free hours during calendar year 2011.

A list of the 2011 Zero Accident Award recipients is below:

### Projects

- ADM  
Columbus, Nebraska, USA
- Akzo Nobel Battlegroup Site  
Houston, Texas, USA
- Ashland Mayflower Project Nanjing, Jiang Su  
Province, China
- ATA-AEDC  
Arnold Air Force Base, Tennessee, USA
- AWE Circinus Construction Project  
Reading, England, United Kingdom
- AWE Mensa Construction Project  
Reading, England, United Kingdom
- Bushy Park Industrial Complex  
Goose Creek, South Carolina, USA
- Carina Construction Project  
Reading, England, United Kingdom
- Chevron Coalinga  
Coalinga, California, USA
- Chevron San Ardo  
San Ardo, California, USA
- ConocoPhillips Company  
Billings, Montana, USA
- ConocoPhillips Humber Refinery  
Lincolnshire, England, United Kingdom
- Dow St. Charles  
St. Charles, Louisiana, USA
- East Los Angeles College  
Monterey Park, California, USA

- EDF Alliance  
Glasgow, Scotland, United Kingdom
- ExxonMobil  
Baytown, Texas, USA
- ExxonMobil Lube  
Port Allen, Louisiana, USA
- FasTracks PSC  
Denver, Colorado, USA
- GSK Project Destiny Office  
Sonepat, India
- Huntsman  
McIntosh, Alabama, USA
- Imperial Oil  
Sarnia, Ontario, Canada
- Ineos  
Carson, California, USA
- Ineos  
Lima, Ohio, USA
- JT ROME Group  
Hampton, Virginia
- JT ROSS Group  
Edwards Air Force Base, California, USA
- Lanxess New Technology Projects  
Antwerp, Belgium
- Lawrence Livermore National Laboratory (NIF)  
Livermore, California, USA
- Los Angeles Expo Light Rail  
Los Angeles, California, USA
- Marafiq Program (PMC)  
Al-Khobar, Saudi Arabia

- Merichem  
Houston, Texas, USA
- Millennium Chemicals  
Lincolnshire, England, United Kingdom
- National Ignition Facility  
Livermore, California, USA
- Okaloosa County School District Construction  
Program IV Niceville, Florida, USA
- Potash Corporation  
(PCS Nitrogen)  
Lima, Ohio, USA
- Reichhold Tianjin  
Tianjin Municipality, China
- Scottish Water  
Pan, Scotland, United Kingdom
- TEAM Turnpike  
Pompano, Florida, USA
- Tennessee Valley Authority, Kingston Ash Recovery  
Project  
Kingston, Tennessee, USA
- Total LOR  
Lincolnshire, England, United Kingdom
- United Utilities  
Cumbria, England, United Kingdom
- Vertellus 3-Cyano  
Nantong, Jiang Su Province, China
- Whiting Refinery Modernization SRC Project  
Whiting, Indiana, USA

### Offices

- Al-Khobar,  
Kingdom of Saudi Arabia
- Baroda,  
India
- Baton Rouge,  
Louisiana, USA
- Charleston Modular Shop  
Goose Creek, South Carolina, USA
- Cork, Ireland
- Croydon, England, United Kingdom
- Delhi, India

- Dublin, Ireland
- DuPont Plant Services Group  
Elkview, West Virginia, USA
- Exeter, England, United Kingdom
- Glasgow, Scotland, United Kingdom
- Grangemouth (INEOS), Scotland, United Kingdom
- Grimsby, England, United Kingdom
- Houston, Texas, USA
- Canberra, Australia
- Leeds, England, United Kingdom
- London (Tower Bridge Office), England,  
United Kingdom

- Maidstone, England, United Kingdom
- Manchester, England, United Kingdom
- Mexico City, Mexico
- Mt. Laurel, New Jersey, USA
- Mumbai, India
- Navi Mumbai, India
- Orlando, Florida, USA
- Singapore, Singapore
- Technology Group Offices  
Tullahoma, Tennessee, USA  
Bingham Farms, Michigan, USA
- Reading, England, United Kingdom





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## 2012 SUSTAINABILITY REPORT

*Thank you for taking the time to read our  
2012 Sustainability Report.*

To access the *2012 Sustainability Report* on our Web site, [www.jacobs.com](http://www.jacobs.com), click on the "About" tab at the top left of our main page, then scroll down to "Sustainability."

For specifics on information included in the *2012 Sustainability Report*, contact Jennifer Malone at [jennifer.malone@jacobs.com](mailto:jennifer.malone@jacobs.com)

***Jacobs: We See Sustainability Differently***

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