

# 2010 SUSTAINABILITY REPORT

# We See Sustainability Differently



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For more information, or to comment on the *Sustainability Report*, write to us at: contactus@jacobs.com.

> All currency conversions in this document are based upon exchange rates from April 30, 2010, except where noted.

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### LETTER FROM PRESIDENT & CEO

#### Gur core values: People are our greatest asset; We are a relationshipbased company; Growth is an imperative; drive our leadership, business practices, and culture. Through good times and bad, they are our compass to help us stay the course and run an ethical, relationshipbased, and costconscious business a sustainable business."



#### I am pleased to share our 2010 Sustainability Report with our clients, colleagues, and employees.

Last year's Sustainability Report defined the way Jacobs sees sustainability differently. We look at sustainability through the lens of our core values, and that perspective continually reinvigorates sustainability within our company.

Our core values: People are our greatest asset; We are a relationship-based company; Growth is an imperative; drive our leadership, business practices, and culture. Through good times and bad, they are our compass to help us stay the course and run an ethical, relationship-based, and cost-conscious business — a sustainable business.

It has been an interesting year for us and for our clients. We have seen increasing challenges and opportunities in relation to sustainability. New regulations, new technologies, changing philosophies, and the ongoing global debate on sustainability and climate change were ever-present in the market.

Though we are mindful of this discussion and its impacts on our clients and our industry, it does not affect the way Jacobs does business. We constantly strive to help our clients achieve all of

**Craig Martin** 

their project objectives. While this report is consistent with our 2009 report, we also introduce some new ideas. We have chosen to utilize the Global Reporting Initiative sustainability reporting framework to support and clarify the data on which we report. Because several of our clients also make use of this methodology, it is an opportunity to establish a common language in our ongoing dialogue on sustainable practices. Furthering and clarifying that dialogue is an exciting prospect, because the

From sustainable project examples, tools, and processes that support our clients, to internal accountability on our own sustainable practices, this report reflects on significant achievements of the past year and reiterates our commitment to a safe and sustainable future.

services we deliver to our clients that help them achieve sustainable project goals are our most

significant contribution to the creation of an enduring sustainable legacy.

I invite you to take a look at our report and read not only about the sustainable services we provide our clients, but about the way in which sustainable practices permeate our culture. We see sustainability differently.

Craig Martin President and CEO

### PREFACE

More than ever before, the passion and knowledge of Jacobs employees is translating into the application of sustainable practices for our clients and within our own organization.

**Robert Norfleet** 



# We are excited to share our 2010 Sustainability Report with you.

A key driver during the development of last year's *Sustainability Report* was the knowledge that we were examining our sustainable philosophy from a unique angle. Last year we looked at the sustainable aspects of our business through the specific lens of our core values, and illustrated to our clients and shareholders the way

that viewpoint allows us to see sustainability differently.

While this year's report is consistent with the 2009 report, we have much more to share with you today. More than ever before, the passion and knowledge of Jacobs employees is translating into the application of sustainable practices for our clients and within our own organization.

The results of that energy and enthusiasm are manifested through many accomplishments this past year. A few examples include:

- Development of a new data capture tool that complements our existing Value Plus tool. The new tool captures information related to carbon savings, green buildings, and energy incentives. Release of Phase 1 is planned for summer 2010;
- A sustainability category has been added to our Jacobs Master Builder awards program, an internal program that recognizes the best of the best among our projects;
- Our Santa Ana, Calif., office, featured in last year's report, is now our first office in the United States with an official 'Gold' rating under the United States Green Building Council's Leadership in Energy and Environmental Design (LEED)-Commercial Interiors rating system.

As always, sustainability remains inseparably linked to Jacobs' Health, Safety, and Environment (HSE) program and ties directly to our BeyondZero<sup>\*</sup> culture of caring. These practices are all evidence of the way sustainability permeates all that we do. Our commitment to sustainability is reinforced on a daily basis; in our offices, at conferences, on client or project sites, and in our homes. It's the way we work and the way we live.

held be

Robert Norfleet Senior Vice President, Quality, HSE & Alliances

### ABOUT JACOBS

acobs 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 160 offices in more than 20 countries, with operations in North America, the United Kingdom, mainland Europe, the Middle East, India, Australia, Africa, and Asia. We were founded in 1947 and our headquarters are 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 2009 revenues exceeded \$11 billion.

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

#### **Countries Where We Have a Presence**

Australia	Mexico
Austria	Netherlands
Belgium	Northern Ireland
Canada	Poland
China	Puerto Rico
Czech Republic	Scotland
England	Singapore
Finland	Spain
France	Sweden
Germany	United Arab
Greece	Emirates
India	United States of
Ireland	America
Italy	Wales

#### **Market Sectors**

#### Refining Infrastructure

Pharmaceuticals & Biotechnology

#### Buildings

Food, Beverage, Forest & Consumer Products

Automotive & Industrial Chemicals & Basic Resources

Environmental Programs

Oil & Gas

Aerospace & Defense

Power & Utilities

# ABOUT JACOBS

#### **Jacobs: Most Admired Engineering & Construction Company**

In 2010, Jacobs was ranked No. 2 in the Engineering & Construction category of *FORTUNE's* "World's Most Admired Companies" list. We tied for the No. 1 spot in 2009.

*FORTUNE's* "World's Most Admired Companies" list is the definitive report card on corporate reputations. This ranking compares Jacobs against other firms in our industry that enjoy the strongest reputations.

To create the list, executives, directors, and securities analysts in our industry rated companies on nine criteria, from investment value to social responsibility. The survey covers 64 industries: 25 international industries and 39 primarily U.S.-market industries.

#### Commitment to Excellence: Jacobs Ranked in 100 Most Trustworthy Companies List in 2010

<sup>66</sup> These are the American businesses that have the most transparent and conservative accounting practices and most prudent management.<sup>99</sup>

Forbes.com

At a time when many companies are receiving unfortunate media attention for financial problems or corporate scandals, Jacobs is proud to be recognized for our integrity and trustworthiness. Forbes.com recently published the "100 Most Trustworthy Companies" list, and Jacobs was the highest ranking firm in our industry. We ranked No. 3 overall in the Large Cap category.

Forbes.com, the online version of the American business magazine *Forbes*, targets world business leaders and is well-known for its lists. To qualify for the roster, the 100 companies all had to have market caps of \$200 million (€150 million, £130 million) or more at the time Audit Integrity prepared the list, AGR ratings of "conservative" or "average" over each of the last four quarters, and no amended filings with the Securities and Exchange Commission or material restatements over the last year. They also had to rank high in Audit Integrity's Equity Risk Ranking, which indicates a positive forecast for equity returns.

Additional award information is available in the Report GRI Appendix.

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Appendix

# OUR PHILOSOPHY We See Sustainability Differently



Sustainable Development is the delivery of competitively priced goods and services that satisfy human needs and bring quality of life. Ecological impacts and resource intensity are progressively and costeffectively reduced throughout the life cycle of those goods and services, thereby ensuring future generations' ability to do the same.

his is an encompassing definition of sustainable development. At Jacobs we reinforce it with a solid foundation. Our core values are that unshakable foundation, the base that allows us to see sustainability differently and ensures our commitment to sustainable development crosses regions, cultures, departments, and disciplines to permeate all that we do.

The following pages illustrate 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, 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, discern the numerous elements that build our approach to sustainable leadership and observe them put into action through our business and our employees, it will become clear that at Jacobs...

We see sustainability differently.

# We See Sustainability Differently

#### **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 a Relationship-based Company, 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 between 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.

#### **Core Tenets of Sustainability**

**People** 

**Environment** 

Growth

#### **People are Our Greatest Asset**

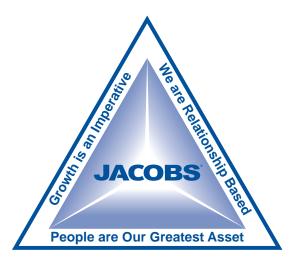
This is the human side of our company. Our people are our most valued asset. As engineers, architects, scientists, planners, builders, and more, we provide a core foundation for our commitment to sustainable development. Our people are experts in the delivery of sustainable development services. We come from diverse backgrounds, speak various languages, and live in geographies around the world. We are residents of New York, Paris, Dubai, Shanghai, and beyond, and exemplify the way we transcend boundaries.

#### We are a Relationship-Based Company

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 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. 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 was natural for us to create guidelines to assist us in our ongoing pursuit of sustainable development. With our core values as their foundation, these seven principles illustrate the way sustainability is woven into the fabric of our company.

#### 1. Sustainable development is a corporate priority

Our core values exemplify our commitment to sustainable development. Our policies, programs, and practices comply with laws, regulations, and good practices of sustainable development.

#### 2. We seek broad, deep capabilities and services

We seek to offer best-in-class capabilities in all aspects of sustainable development. We learn from ongoing research and study industry developments. And we benefit from opportunities to share best practices internally and with clients.

#### 3. Sustainable development is integrated into our business

We integrate appropriate sustainable practices, including continuous performance improvement processes, into our work processes and programs.

#### 4. We strive to broaden our sustainable influence

We train and educate employees on current principles, technologies, and best practices that support sustainability. We seek to advise and educate customers on their best options.

#### 5. Our facilities and operations follow sustainable principles

We apply economically sound sustainable development principles to our business and seek to maximize energy efficiency, use renewable resources, and minimize waste. Our activities are undertaken with a commitment to prevent serious or irreversible impacts on our environment.

#### 6. We encourage others toward sustainable development

We encourage our supply-chain partners to adopt similar sustainable principles and improvements. We foster the transfer of knowledge, support the dissemination of best practices in public forums, and provide policy advice to government and non-government organizations.

#### 7. We are open and transparent, responding to concerns as they arise

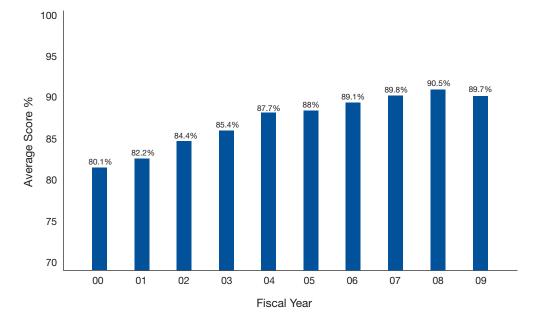
Transparency is critical to running an ethical business. We foster dialogue on issues of sustainable development and are responsive to concerns raised about our practices. We measure our performance, present a periodic progress report to our Board of Directors, and provide annual reporting as part of our public disclosure.

#### 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 Satisfaction Survey is a formal process that allows 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 around 90 percent. We are proud of this accomplishment and driven to continue to improve these scores year after year.



#### **Historical Client Satisfaction Survey Results**

#### **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 The U.S. Securities and Exchange Commission (SEC). More information on our responsibilities to our shareholders can be found on 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 include:**

- People Metrics employee opinion survey, conducted every two years, which gathers employee perceptions about their Jacobs work experience. In 2009 we had 74 percent staff employee participation in our People Metrics survey. We have found from our survey results that we have a highly engaged workforce, and strong survey results as comparable with other companies in the professional service area.
- Annual Business Meeting (ABM) that 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 with the opportunity to build multi-national networks, develop leadership and technical skills, and enhance their careers at Jacobs.



**Annual Business Meeting** 



Jacobs' Professional Women's Collaborative

#### Governance

We are proud to have a strong and independent Board of Directors. The 12-member Board is always to be comprised of a majority of independent directors. The Chairman of the Board is not an executive officer with Jacobs.

The Board has adopted a code of Business Conduct and Ethics for the directors of the Company. The code is intended to focus the Board and each director on areas of ethical risk, provide guidance to directors to help them recognize and deal with ethical issues, provide mechanisms to report unethical conduct, and help foster a culture of honesty and accountability. Each director must comply with the letter and spirit of this code. More information is available on the corporate governance page of our Web site, www.jacobs.com.

#### **Board of Directors**



Joseph R. Bronson **Director (Chief Executive** Officer of Silicon Valley Technology Corporation)



John F. Coyne Director (President and Chief Executive Officer of Western Digital Corporation)



Robert C. Davidson, Jr. Director (Retired. Former Chairman and Chief Executive Officer of Surface Protection Industries, Inc.)



Edward V. Fritzky Director (Retired, Former Director of Amgen; Former President & Chairman of the Board of Immunex Corporation)



Thomas M.T. Niles Director (Vice Chairman of United States Council for International Business; Former Ambassador to Canada)



Robert B. Gwyn Director (Retired, Former CEO and Chairman of the Board of Agricultural Minerals and Chemicals. Inc.)



Peter J. Robertson **Director** (Former Vice Chairman of Chevron Corp.)



John P. Jumper Director (Retired. Former Chief of Staff, U.S. Air Force)



Linda Fayne Levinson Director (Former Partner of **GRP** Partners)



Benjamin F. Montoya Director (Retired. Former Commander of Naval Facilities Engineering Command)



Linda K. Jacobs **Director Emerita** 





Noel G. Watson Chairman of the Board

Craig L. Martin

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#### **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 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 certain other employees, depending on their specific role in the company.

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 trainings, 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. In 2009, more than 200 company leaders attended one of these programs.

Violation of company corruption policies have severe consequences, including termination of employment.

See our Business Conduct Policy on our investor relations page at www.jacobs.com for more information.

EACH YEAR OUR STAFF EMPLOYEES ARE REQUIRED TO REVIEW THE BUSINESS CODE OF CONDUCT AND REAFFIRM THEIR UNDERSTANDING.



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

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:

- Employees are encouraged to ask questions
- 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. 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

# 2009 Ethics and Compliance course completions:

- Preventing Workplace Harassment Supervisor: approximately 6,000 employees
- Violence Prevention at the Workplace Supervisor: approximately 6,000 employees

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Jacobs employees reaffirm the Business Code of Conduct annually and take additional compliance courses through our on-line learning system. Jacobs is committed to building a stronger company, 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. This foundation is upheld by our core values. Those core values drive our leadership, business practices, and culture. They reinforce our commitment to a sustainable, safe, and ethical workplace, and ensure we offer our clients the best services possible, worldwide, at all times.

# PROCESSES & SERVICES FOR OUR CLIENTS We See Sustainability Differently



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 tangible, technical solutions that make a positive impact on our clients' triple bottom line and the environment in which we all live and work.

acobs' efficient use of tools, processes, and methodologies saves our clients time, money, and resources. We are committed not only to staying abreast of the latest technological advances, but also to going beyond and developing our own innovations to support sustainable solutions. This is an integral part of bringing added value to our clients, which is our commitment on every project, large or small, around the globe.

The following pages detail our overarching project development methodologies, as well as provide a few examples of the types of tools we use to support each phase of the prototypical 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, and our commitment to exceeding expectations.

#### **Sustainable Services**

ЕРСМ	Corporate Responsibility	Carbon Management	Public Sector	Climate Change
BREEAM / LEED CEEQUAL Master planning Sustainability assessments Life cycle reviews Energy efficiencies Materials selection (incl. carbon) Sustainable design Commissioning	Verification Auditing Management systems Waste minimization	Carbon footprinting and accounting Sustainable energy auditing Carbon strategy development Low and zero carbon technology GHG certification and compliance	Strategy and policy SD assessments Environmental impact studies Reporting and measurement Procurement Community / stakeholder consultation	Reporting Design impacts on developments Planning Risk assessments Adaptation advice Scenario planning

#### Health, Safety & Environment

At Jacobs we take the safety of our employees, our clients, our partners, and our communities very seriously.

Our employees are considered our most important asset and, therefore, the prevention of job-related injuries and illnesses is given precedence over other activities. It is our policy to provide and maintain a safe and healthful working environment and to follow operating practices that safeguard all employees.

While we have many policies and operating procedures in place, it is not the job of only one manager, or one corporate staff member, or one employee, to enforce adherence to those policies. At Jacobs we see safety as everyone's responsibility.

Launched in 2007, Jacobs Safety Information Management System (JSIMS) is our Web-based system that tracks safety incidents, including environmental safety, around the globe. JSIMS is multilingual with access in English, French, Spanish, Italian, Finnish, Swedish, Dutch, and German.

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 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.

Our passion for safety is embedded in our culture — it follows us to our client sites, our offices, and our homes.

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#### **JSIMS** also supports:

- Automatic notification of incidents and updates
- Tracking closure on action items related to each incident
- Reporting Health Safety Environment data and metrics within Jacobs
- Compliance with regulatory bodies

#### Planning: Project Delivery Methodology

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

A key factor in any sustainable design is efficiency. The ability to ascertain an efficient process comes from attaining and analyzing repeatable and predictable results. JSTEPS is the Jacobs system that demonstrates repeatability. Repeatable service delivery is instrumental in achieving on-time and on-budget project delivery. Until projects are delivered in a consistent way, real continuous improvement is not possible. Continuous improvement produces successful projects and strengthens client relationships. Client satisfaction results in repeat business, which allows the cycle to continue. We are proud that 90 percent of our work is repeat business.

JSTEPS is a flexible delivery system that was developed with the specific understanding that every client has unique needs. Therefore, this tool can be customized to meet the needs of our clients in every industry we serve.

Seven Phases of JSTEPS
Phase 1: Business Opportunity Analysis
Phase 2: Conceptual
Phase 3: Project Definition
Phase 4: Detailed Design & Procurement
Phase 5: Construction
Phase 6: Start-up
Phase 7: Close-out

#### Jacobs 13-Step Sustainable Development Methodology

Through JSTEPS, we offer predictability and repeatability to our clients. The next step is to assist our clients with the articulation of the sustainable elements in their projects, and to create a strategy to meet their project goals. We are committed to seeking the sustainable opportunities in every project. Our expertise and typical early involvement in the project process allows us to help clients recognize specific sustainable goals that may not be readily identifiable.

Jacobs' 13-Step Sustainable Development Methodology was designed to build in sustainable thinking at the earliest stages and then to track sustainability through the life cycle of the project. This process is most often applied to building projects, but it also can serve as a guide for projects across all of our market sectors.

This 13-step process has no geographic limitations. It crosses the various market sectors where Jacobs operates and provides a pathway to practical, sustainable solutions for our clients' specific projects and programs.

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	The 13 Steps
	1. Define the need
	2. Sustainability project assessment
PLAN	3. Options appraised
	4. Sustainability brief development
7	5. Implementation into design
DESIGN	6. Measure progress
	7. Sustainability performance indicators
BUILD	8. Sustainable construction (typical building project)
	9. Handover and commissioning
	10. Defects and performance
ш	11. Operation - feedback to design
PERAT	12. Refurbishment
ō	13. Deconstruction and re-use
OPERATE BUILD	<ul> <li>9. Handover and commissioning</li> <li>10. Defects and performance</li> <li>11. Operation - feedback to design</li> <li>12. Refurbishment</li> </ul>

WE BUILD IN SUSTAINABLE THINKING AT THE EARLIEST STAGES AND THEN TRACK SUSTAINABILITY THROUGH THE LIFE CYCLE OF THE PROJECT.

#### **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 has developed the C-CLEAR energy management and carbon reduction tool, which it has applied with various clients, including Gatwick Airport and the BBC. The basic C-CLEAR method takes the project and client team through the following six steps:

#### Six Steps of C-Clear

**C** – **Communicate:** This covers agreements with client sponsors, resource and project managers, facility managers, and technical representatives.

**C** – **Calculate:** This covers a wide range of activities, including assessing billing/consumption data, review of site, asset and plant specification and condition, taking on-site measurements, and benchmarking.

L – List: This covers producing a 'league table' of energy use and benchmark information per site, and in generating an options overview and a prioritized, costed list of opportunities.

**E – Evaluate:** Listed opportunities are evaluated according to agreed criteria to deliver cost-effective savings against client targets.

**A** – **Agree:** The projects to go forward and develop work programs are identified in more detail and agreed upon with client representatives.

**R – Review:** Assess effectiveness of implemented projects. This step is not always part of the commission, depending on part of the first the time period required for implementation and impact evaluation.



#### **Designing & Building**

#### Sustainability & BIM

Building Information Modeling (BIM) facilitates the complex processes and analyses associated with building performance analysis and evaluation. We create models to predict building performance and can include facility sustainability analysis (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.

For example, based upon analysis, buildings can be re-sized and re-oriented to make better use of solar and site characteristics. BIM also plays a critical role during building operation and maintenance, easing system evaluation to ensure maximum operating efficiency. Some other significant sustainable-related functions of BIM include the ability to:

- Use calculated percentages of material re-use, recycling, or salvage
- Use daylight studies to analyze heat gain, shadows, and views
- Integrate material properties and analysis of square footage of materials with photovoltaic studies, and with mechanical load calculations
- Calculate the amount of recycled content, including steel (tonnage calculation) and concrete (cubic footage calculation)
- Tag items in the model that contain recycled content and contribute to LEED efforts

# Building Information Models can include:

- Facility sustainability analysis
- Mechanical simulation and analysis
- Daylighting
- Energy performance
- Life cycle assessment

#### **Eco-charrette**

A charrette is a collaborative session initiated to draft a solution to a design problem that meets the interests and needs of a varied group of people. The structure of a charrette varies based upon the design issue being addressed and the individuals in the group.

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.

#### **Eco-charette in Action**

Last year we were contracted by multiple clients to conduct highperformance eco-charrettes. Two specific examples are the Army National Guard Arden Hills Training Site (AHATS) in Arden Hills, Minn., and the Las Cruces Army Reserve Center (LCARC), in Las Cruces, N.M.

The 1,500-acre (610-hectare) AHATS site serves as a case study model for sustainability within the U.S. Army National Guard. A three-day eco-charrette focused on the introduction of sustainable strategies and technologies that complemented the master plan. Site specific solutions included Low Impact Development (LID), rainwater harvesting, and building envelope energy efficient measures.

The LCARC project was selected for participation in the U.S. Army Reserve Energy Reduction Pilot Projects Program. In anticipation of future legislation that will require additional energy reductions, this project explores the feasibility of LEED Platinum and Net Zero Energy goals for an Army Training facility. The eco-charrette furthered this goal, and encompassed whole building design, rain water harvesting, photovoltaic technology, solar water heating, and thermal mass strategies.



Project team members participate in an eco-charrette for the Las Cruces Army Reserve Center Efficiency Pilot Project in Las Cruces, N.M.



The Army National Guard Arden Hills Training Site (AHATS), in Arden Hills, Minn., is a sustainable case study model for the U.S. Army National Guard.

#### **Carbon Calculator**

Sustainable construction has been an important issue in our industry for many years. Today, more and more international laws and building codes are being enacted which require buildings, particularly government buildings, to be designed and constructed in a way that minimizes the carbon footprint on our ecosystem. Practices that contribute to sustainable construction are being considered in many diverse places around the world.

The biggest investment in sustainable construction originated in Europe, but much of the rest of the world is now following suit. In the U.S., President Obama signed an executive order in October 2009 that requires all Federal buildings to consider such factors during construction and, additionally, by 2030 all Federal buildings must be Net Zero Energy facilities.

Jacobs is already ahead of the game in this arena. Part of our business philosophy is lean construction. We are committed to a low-cost, high-efficiency business model, which therefore incorporates waste minimization, low-energy use facilities, and more. We also have tools in place that we continue to expand upon to facilitate sustainable construction methods.

The Carbon Calculator is an innovative tool that has made a big impact in a short time. We developed the Carbon Calculator in 2007 as a result of a 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  $CO_2$  associated with transportation of those materials. The calculator also factors in personal travel, site energy, and waste management. For the EA, the tool helps assess and compare the sustainability of different designs in terms of  $CO_2$ .

# Award-Winning Carbon Calculator

The original Carbon Calculator won the 2008 Environment Agency's Award for Environmental Excellence

#### **Net Zero Energy**

Net Zero Energy is a general term typically applied to a building's use with zero net energy consumption. Net Zero Energy refers to the case where the amount of energy provided by on-site renewable energy sources is equal to the amount of energy used by the building.

The Environment Agency was so pleased with the Carbon Calculator that they asked Jacobs to develop a companion tool, the EA Refurbishment Carbon Calculator (RCC).

The RCC was created using the principles and data utilized in the production of the original EA Carbon Calculator. Developed from the initial application to flood defense projects, the RCC is a tool used by the EA to help it understand and reduce the carbon footprint of its building refurbishment projects.

# The Environmental Agency Refurbishment Carbon Calculator tool looks at the following:

- **1. Materials:** The embodied CO<sub>2</sub> of materials (i.e. the fossil CO<sub>2</sub> emissions associated with material manufacture (including resource extraction, manufacture, and transportation);
- **2. Transport:** The fossil CO<sub>2</sub> emissions associated with the transport of materials, personnel, and waste; and
- **3. Utilities:** The fossil CO<sub>2</sub> emissions resulting from site activity (i.e. utilities use) during refurbishment.

Following a recent update to include the latest available carbon emissions data, the tool is being rolled out nationally for use on the EA's building refurbishment projects, as part of its wider strategy to reduced carbon emissions across its building portfolio.

The original Carbon Calculator can be used by additional construction clients, contractors, and consultants when assessing their activities. Developing adaptations and additional uses for the Carbon Calculator is an ongoing process as we work to adapt the methodology to be applicable in other industries, such as transportation and water.

# Practices that contribute to sustainable construction include:

- Minimal energy usage facilities
- Waste minimization during construction
- Designs that save and recycle water
- Low energy material delivery and storage
- Low carbon building materials
- Lean construction

#### Operating

#### 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. This long-term vision ties in closely with our core value of nurturing strategic alliances and long-term client relationships.

While the industry originally viewed commissioning as a process which had an endpoint at substantial completion of a project or warranty expiration, at Jacobs we recognize this process does not end with project completion, but rather continues as a bridge to permanent asset management — especially management of environmental systems — in a very comprehensive manner.

Many of our projects — refineries, manufacturing and chemical plants, central utility plants, schools, public buildings, and medical facilities — have high rates of utility and system usage and, therefore, benefit from efficiencies gained through commissioning. At facilities we operate, our goal is a safe and environmentally sound system that performs at the highest level throughout the project life cycle. We strive to maintain performance that is within 98 percent of the original design performance level.



#### Cedar Rapids Courthouse

Jacobs is providing PM/CM, commissioning, and system integration services for this new United States Federal Courthouse in Cedar Rapids, Iowa.

#### **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<sup>®</sup> and EUROCLAUS<sup>®</sup> technologies, or others that we sub-license. Our technologists are expert in all of the key processes to maximize "Sulfur Block" performance. These include gas/liquid treating technologies, NH3 destruction, hydrocarbon destruction, O<sub>2</sub> enrichment, sulfur degassing, and sulfur handling.

#### Sulfur Solutions in Action

The technology innovations we develop help our clients find sustainable solutions for their investments. For one client, we are implementing our revolutionary Advanced Burner Control+ System (ABC+). Using an acid gas feed analyzer and a dynamic algorithm, this pioneering system controls combustion air to the reaction furnace. Effective control is achieved through quick, accurate measurements of H<sub>2</sub>S, total hydrocarbons, CO<sub>2</sub>, and H<sub>2</sub>O.

ABC+ benefits the sulfur recovery units in gas plant, power plant, refinery, and heavy oil upgrader installations. With the benefits of longer life for sulfur plant catalyst and reduced unscheduled downtime, ABC+ saves our clients money. More so, ABC+ helps protect the environment.



Jacobs provides expertise, technology, and full delivery for cost-effective recovery plant operations.

#### **Getting Results**

#### **Jacobs Value Plus**

Our Jacobs Value Plus program 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 Jacobs Value Plus is to deliver, measure, and demonstrate value to our clients by increasing their return on investment. In 2009, we saved or avoided an estimated \$2.4 billion ( $\in 1.8$  billion, £1.6 billion) that was passed on to our clients through our Jacobs Value Plus program.

This program is a powerful competitive advantage for our business. It clearly illustrates our culture of going the extra mile for our clients, understanding our clients' businesses, and ensuring their businesses are better for having worked with Jacobs.

#### **Jacobs Sustainability Plus**

Jacobs Sustainability Plus is a new data capture tool designed by a global team of Jacobs' sustainability experts. Phase 1 of the tool was designed to capture sustainable-related information, specifically in regards to carbon savings, green buildings, and energy incentives. In addition to capturing this information, the tool is intended to create and nurture an inspiring environment for our project teams to develop ideas targeted at both energy efficiency and the reduction of carbon emissions.

A complement to our existing Value Plus tool, this new tool is planned to become an integral part of our Quality Data System. Release of Phase 1 is planned for summer 2010.

Phase 2 of the tool's development will consist of expansion to include capture of additional sustainable practices and results. Because this tool fits easily within our existing Quality Data System, as it evolves it will continue to bring added value to our clients.

# JacobsValue+

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#### **Exceeding Expectations**

We follow the laws, rules, and regulations of every place and country in which we work. Yet at Jacobs it's about more than simply following the rules. 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 criterion of our partner and subcontractor evaluation and selection process. We do not work with any company that does not respect the United Nation's 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 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.

#### **Employee Human Rights Training**

In 2009, Jacobs' employees accumulated thousands of hours of training on policies and procedures on human rights issues. Some examples include:

- BeyondZero<sup>®</sup> (safekeeping of employee): approximately 6,000 hours
- Management Leadership Course: approximately 5,000 hours
- Preventing Workplace Harassment: approximately 8,000 hours
- Preventing Workplace Violence: approximately 6,000 hours
- HIPAA (employee privacy): approximately 400 hours

#### **Diversity**

As a global industry leader, Jacobs employs a dynamic mix of people to create the strongest company possible. We understand that drawing upon employees' differences and viewpoints enables us to develop better, more innovative services for existing and potential clients.

While 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 — at Jacobs it's much more than policy or law. 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.

The people who work for Jacobs are only part of the equation. The companies with which we associate are also important. 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) database 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.



**Jacobs Recruiting Booth Graphics** 

#### We foster diversity in many ways. Some specific examples include:

- Jacobs Professional Women's Collaborative
- Jacobs Diversity Council & Steering Committee
- Jacobs Graduate Program
- **G**Built upon the strength of diversity, Jacobs is recognized and dedicated to providing engineering, construction, and consulting services to a wide spectrum of businesses and industries, from environmental and facilities, pharmaceuticals and biotechnology to refining and petrochemicals. Moreover, we strive to provide these services to our clients faster, better, and cheaper. As such, Jacobs believes that in order to maintain a competitive edge, we require the assistance of outstanding small and small disadvantaged businesses that are flexible, innovative, and attentive to our changing needs. At Jacobs, small business is smart business.

Noel G. Watson Chairman, Jacobs Helping to solve our clients' toughest challenges and ensure we offer them the best services possible is always our leading priority. We know also that the services we deliver to our clients are some of the most significant contributions we make to a sustainable future. 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.

# CLIENT PROFILES

# We See Sustainability Differently



The tools, processes, and methodologies we use all aim at one end goal: a successful project.

We are dedicated to not only meeting, but exceeding client expectations and providing superior value. Our sustainable principles and practices are designed to help our clients achieve success by improving their business. The following pages of project profiles illustrate the way our sustainable services cross all market sectors and geographic boundaries.

## Twice the Benefit



ISSEANE Household Waste Treatment Center Syctom Paris, France

### Energy Cogeneration and Waste Sorting

or the ISSEANE project, Jacobs worked with the Syctom of the Paris urban agglomeration on the construction of a new Household Waste Treatment Center at the entrance of Paris. For 10 years, Jacobs actively contributed to this over €600 million (\$790 million, £520 million) project, providing owner engineering assistance and technical consulting services during engineering, bid packages, procurement, construction, commissioning, and final owner acceptance phases.

This ultra-modern new waste treatment center serves dual purposes: energy cogeneration and waste sorting. Every year, 460,000 tons of waste are converted into steam and electricity, while 20,000 tons of waste are sorted for recycling.

All of these features to the right make the ISSEANE Household Waste Treatment Center a state-of-the-art installation, from an architectural, technological, logistic, environmental, and sustainable development standpoint.

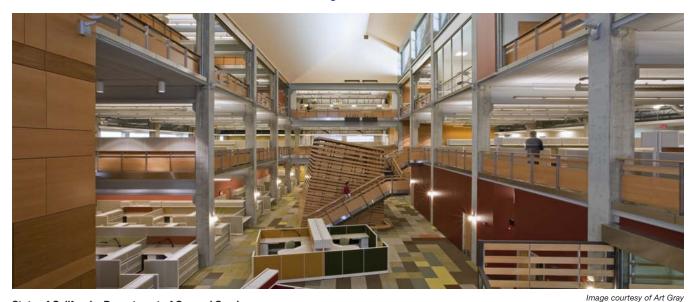
## The steam generated from incineration is:

- Used to heat the equivalent of 79,000 houses
- Transformed into electricity to satisfy the center's power needs, especially over summer

## A strong focus on sustainable development:

- Facility automation with sensors connected to a Fieldbus Foundation Network
- Specific exhaust treatment
- State-of-the-art smoke treatment so unpleasant smells are destroyed

# **Built-In Sustainability**



State of California, Department of General Services Caltrans District 3 Office Building Replacement Marysville, California

### Caltrans New District 3 Office Building

he California Department of General Services contracted with Jacobs in 2005 to provide construction management services for the new Caltrans District 3 Office Building. Turner Construction and AC Martin Partners were also on the project team.

The existing District 3 office building, constructed from the mid-1930s to the 1970s, had been outgrown and was outdated. Office needs and staff had grown to many times the original building size.

Caltrans wanted to create a healthy building filled with natural light, with the dual goals of consolidating scattered operations and cultivating a collaborative environment within and between their numerous divisions. With this objective in mind, Jacobs aided in shepherding the project through the pre-design/build and design/build processes, culminating in a building design which is aligned to take advantage of a long east-west axis. This design helps ensure every work space is within 37 feet (11.2 meters) of natural light that either streams in from the building's perimeter windows or from the four-story interior "canyon," an atrium-like space bathed in controlled natural light from south-facing clerestory windows.

Daylight Harvesting



Indoor Air Quality

This "canyon" space also provides increased air circulation and open sight lines between all floors of the building, as well as among interior and exterior spaces. These features play a significant role in the building's planned achievement of LEED Silver certification from the United States Green Building Council.



Image courtesy of Art Gray

# A Growing Benefit



WarmCO<sub>2</sub> Glastuinbouw Terneuzen Terneuzen, The Netherlands

### Recycling Heat Waste for Greenhouse Farming

s part of Biopark Terneuzen, 250 hectares (620 acres) of land are being transformed into a unique sustainable greenhouse farming area called Glastuinbouw Terneuzen. This is attributed to WarmCO<sub>2</sub>, a developer of innovative, environmentally friendly, and economically competitive energy infrastructure. This development lowers the cost of energy and CO<sub>2</sub> emissions by establishing a symbiotic relationship between industry and vegetable farming.

The greenhouses are the most energy-friendly in Holland based on the recycled use of industrial waste heat and CO<sub>2</sub> from the mineral fertilizer producer Yara. By utilizing Yara's energy waste, the dependency on the traditional method of burning fossil fuel to generate heat is reduced to just 10 percent of the typical gas consumption of greenhouse farmers.

Jacobs worked in close cooperation with WarmCO<sub>2</sub>, Yara, and Visser & Smit Hanab to design the necessary modifications for Yara's heat exchanger and buffers and the distribution network of 10 km (6.2 miles) for water and 5 km (3.1 miles) for CO<sub>2</sub> gas to the greenhouses. Together we designed a system <sup>66</sup> Jacobs was the integrator and bridge between two very different businesses; the highly technical and complex requirements of a chemical facility (Yara), contrasted with the straightforward yet cyclical needs of the greenhouse farming community. Jacobs experience, knowledge, and interface management skill are highly valued by WarmCO<sub>2</sub>.<sup>99</sup>

#### Jan Uilenreef, Managing Director of WarmCO<sub>2</sub>

that minimizes disturbances to the waste heat and CO<sub>2</sub> supplier Yara, and maximizes the energy availability to the greenhouse farmers throughout their growth seasons where they experience high fluctuating demands for both heat and CO<sub>2</sub>.

For this 'first generation' development project, Jacobs provided basic design assistance and detailed engineering services, demonstrating a high level of flexibility and adaptability in design and in the management of multiple stakeholder interfaces.

WarmCO<sub>2</sub> was established as a joint venture of the port authorities Zeeland Seaports, the Yara mineral fertilizer plant in Sluiskil, and the industrial contractor VolkerWessels as parent company of the Visser & Smit Hanab.

# State-of-the-Art Wind Tunnel Testing



U.S. Department of Energy Department of Energy Heavy Vehicle Test Arnold Engineering Development Center's National Full-Scale Aerodynamics Complex, Moffett Field, California

## Reducing Aerodynamic Drag

ith average fuel economy between five and seven miles per gallon, (2.1 and 3 km per L) the Department of Energy (DOE) has recognized significant fuel savings are possible on interstate highways.

The high volume of heavy vehicles on the road combined with the hundreds of thousands of miles traveled every year make this industry ripe for large fuel savings through potentially minor efficiency improvements. While a large amount of work goes into the truck engine efficiency and aerodynamic improvements to the tractors, the trailers that are pulled by these trucks are often overlooked. In the crosswinds on the plains of Middle America the trailers are a large source of aerodynamic drag.

The DOE wanted to make a baseline assessment of a cross-section of currently available technologies to reduce aerodynamic drag on both tractors and trailers and explore newly developed devices to assess their potential benefits. Jacobs was commissioned to support this goal through state-of-the-art wind tunnel tests in the world's largest wind tunnel facility.

The heavy vehicle test focused on the evaluation of currently available or close-to-market technologies to reduce the aerodynamic drag of combined Class 8 tractor-semitrailers. Measurements of vehicle drag, side force, and yawing moment along with trailer base pressures were used to assess the incremental improvement of each device or configuration outlined in the test matrix. Vehicle attitudes (relative to wind direction) and wind speeds were varied to simulate crosswind events on interstate highways. Successfully reducing drag not only increases fuel efficiency, but also reduces carbon emissions.

The majority of the testing used a current production trailer that was 13.5' tall x 8.5' wide x 53' long, or 6,081 cubic feet (173 cubic meters). The National Full-Scale Aerodynamics Complex (NFAC) 80' x 120' test facility is the only wind tunnel in the world that can accommodate this configuration.

# **Incorporating Efficiencies**

Sustainable Elements in Expansion Projects

#### Abbott

Abbott Nutritional International Singapore Expansion Capacity Project Tuas, Singapore

acobs was commissioned by Abbott to serve as Engineering Contractor for the Abbott Nutritional International Singapore Expansion Capacity Project. Abbott Nutritional is a new nutritional facility with the capacity to manufacture 63.5 million kg/yr of nutritional powders.

This facility includes a central utilities building, administration and lab building, office facilities, a wastewater treatment plant, warehousing, truck handling facilities, a tank farm for water storage, dry ingredients unloading, distribution and storage systems, including facility for flexible intermediate bulk container (FIBC) bags, and 25kg bag unloading. Also included are twooff evaporators, each complete with dual UHT-type heating assemblies, and two-off spray dryers complete with integrated fluid bed and vibro-fluidiser, four-off primary cyclones, and two-off secondary cyclones.

## Sustainable elements of the project include:

- Energy efficient lifts and escalators. All five lifts in the facility (three passenger and two cargo) are preprogrammed to go into sleep-mode after 15 minutes of idle time.
- Water efficient fittings covered under the Water Efficiency Labeling Scheme (WELS).
- More efficient concrete usage for building components. All the structural columns, beams, and floor slabs which were cast in-situ were included except the walls, which are of hollow block works.
- Use of reverse osmosis (RO). Plant reject water is used as rinse water for equipment rather than sending it to drainage.

## Successful Land Restoration



East Midlands Development Agency (emda) Avenue Remediation and Landscaping Project Chesterfield, Derbyshire, United Kingdom

### Renewed Economic and Social Value

acobs is working on the Avenue Coking Works, the United Kingdom's largest remediation project, with their client, East Midlands Development Agency (emda). emda's role as land owner is to carry out the site clean-up in the safest way through a team of specialist contractors. As the largest single project in the National Coalfields Programme, funded by the Homes and Communities Agency, it is costing £172.3 million (\$264.3 million, €199.6 million) to bring the contaminated land at the Avenue back into beneficial use.

Demolition and remediation will be completed using environmentally sound practices to turn the site, which has been contaminated through its former use, into an economically and socially valuable resource. Throughout the course of the project, Jacobs has been proactive in the recommendation and implementation of a number of sustainability initiatives. These include development and management of an Environmental Management System (EMS) for the project (certified to ISO14001 and registered to the EU Eco-Management and Audit Scheme – EMAS), development and reporting against a system of sustainability key performance indicators (KPIs), and an assessment of the project under the CEEQUAL (Civil Engineering Environmental QUALity) assessment and awards scheme. Collectively, such measures have helped reduce the risks of health and safety and environmental incidents, and avoid prosecution. The project is due to complete in 2015.

# **Enhancing Performance**



BP Geel New Waste Water Treatment Bioreactor Geel, Belgium

### BP's First Concrete Anaerobic Reactor

P aims to find innovative solutions to continuously improve its operations across the globe. At BP's PTA plant in Geel, Belgium, such an approach was used when building a new anaerobic waste water treatment reactor.

Jacobs provided conceptual, basic, and detailed design, procurement, and construction support for the project. Together, Jacobs and BP designed a cost-effective and innovative system. Alternative materials were selected; concrete for the reactor and HDPE plastic for the piping, rather than conventional steel. This approach delivered enhanced performance of the anaerobic waste treatment at BP Geel, with a significant reduction in CO<sub>2</sub> emissions, and with a 35 percent cost reduction to the original estimate.

The reactor in Geel is the first concrete anaerobic reactor for BP worldwide. The project was achieved safely, on time, and within budget. Today, the waste reactor is functioning beyond its design capacity.

# Successful Wetland Restoration



**U.S. Army Corps of Engineers, Alaska District (USAED)** Kodiak Asphalt Disposal Area Valley Wetland Restoration Kodiak, Alaska

### Creating a Flexible Ecology

acobs was commissioned in 2004 by the U.S. Army Corps of Engineers, Alaska District (USAED) to provide design, subcontracting, construction oversight, and ongoing monitoring of the success of revegetation efforts for the Kodiak Asphalt Disposal Area (ADA) Valley Wetland Restoration project.

Working with the hydrology that existed after the remediation efforts, Jacobs developed a restoration plan that made use of the permanent brackish pond that would enlarge and freshen following heavy rainfall. This solution avoided mimicking the pre-mediation hydrology and eliminated the need to raise and seal the pond bottom to recreate a perched freshwater pond.

The ADA wetland restoration project accelerated the process of ecological succession and fostered the establishment of a range of plant species. By providing multiple species with a range of preferred environments, the wetland restoration strove to create a flexible ecology capable of adapting to a range of site conditions, an ecology that would continue to thrive despite the year-to-year vicissitudes in climate. Although natural succession would have revegetated the site eventually, active restoration provided greater diversity and higher habitat value in a shorter period than would likely have been established by natural processes alone.

The USAED conducted an extensive cleanup effort at this site in 2000 and 2001, resulting in excavation and removal of:

- Numerous 55-gallon (210 L) drums
- 46 tons of metal
- 52,000 tons of soil contaminated by asphalt and diesel fuel

# Meeting the Challenge



Naval Facilities Engineering Command Marianas Bachelor Enlisted Quarters P 469 U.S. Naval Base Guam – Santa Rita, Guam

### Designing a Sustainable Building in a Tropical Environment

acobs and Hensel Phelps Construction Company have been commissioned in a design-build effort by the U.S. Navy to construct a new 9,280-square-meter (100,000 square foot), 280-person Bachelor Enlisted Quarters (BEQ) building at U.S. Naval Base Guam in Santa Rita, Guam. In addition to the BEQ, additional site amenities include: a central utility plant; on-site parking; solar hot water and photovoltaic arrays; barbeque pavilion; sand volleyball court; and an on-site detention basin. Supporting facilities include water, sewer, storm, electric, fire protection, security lighting, paving, and site improvements. Landscaping elements, including native plant species and berms, along with passive Antiterrorism/Force Protection measures, are incorporated into the design.

Severe weather conditions present additional design challenges. All building elements are designed to withstand wind (up to 170 mph) and seismic loads. Due to the significant amount of annual rainfall in Guam, the site layout includes the use of pervious pavers on the fire access road to limit the amount of impervious area created on site. Additional storm water management

measures include infiltration basins designed to permanently retain and infiltrate storm runoff volume. These features are contributing to earning LEED Sustainable Sites credits 6.1 and 6.2.

The design includes photovoltaic (PV) and solar hot water panels. These ground-mounted systems will provide the power requirements for the street parking lights and 105 percent of the estimated hot water demand. Energy efficiency measures include an improved thermal envelope, reduced lighting power density, energy efficient HVAC system, and on-site renewable energy. This will result in energy performance rating of 43 percent using the ASHRAE 90.1-2004 Appendix G methodology.

An Indoor Air Quality Management Plan will be implemented to improve air quality prior to occupancy. This involves performing a building flush-out by supplying a total air volume of 14,000-cubic-foot (400 cubic meters) of outdoor air per square-foot of floor.

# CO<sub>2</sub> Savings



British Airport Authority (BAA) BAA Heathrow Airport Ltd Energy & Infrastructure Project London, England

### Benefits of New Energy Infrastructure

acobs has been commissioned to provide the multi-discipline design of a major new energy center and district heating scheme to replace life-expired heating assets in the Heathrow Airport central terminals, as well as to provide new heating and cooling capacity to meet the needs of the new Terminal 2 development. The project has a projected construction value of circa £60 million (\$92 million, €69 million).

A primary objective of the scheme is to provide new energy infrastructure assets within the context of  $CO_2$  reduction and the Heathrow Low Carbon Energy Strategy.

The energy center includes both gas fired boiler capacity (initially 20 MW, expandable to 40 MW) as well as renewable energy generating technology in the form of a 1.8 MW (power), 9 MW (thermal) combined cooling heat and power scheme that utilizes biomass fuel. This is derived from locally sourced wood chip fuel and powers an Organic Rankine Cycle prime mover. Cooling is also delivered using the renewable heat source to power a 2 MW absorption chiller.

Jacobs' commission is truly multi-discipline, including architectural, structural, civil, and mechanical and electrical scheme designs as well as the verification of the most appropriate generation technology, modelling base heat and power demands, and establishing commercial viability in terms of financial and operational parameters, including plant management and fuel supply chain issues. The scope includes the design of the district heating pipework distribution network and all interfacing controls, metering, and interfaces with the various buildings over the extensive Heathrow campus area. The work has progressed to developing the scheme design and tender packages to enable procurement of the scheme via a Complex Build Integration Contractor.

Since the initial project award, British Airport Authority has appointed Jacobs as Concept Guardian and our role will continue over the procurement period to oversee the Contractors works, including operational trials and performance proving.

The scheme is scheduled to complete by April 2013 and, when fully operational, should deliver over 15,000 tons of CO<sub>2</sub> savings per year.

# **Environmentally Friendly Materials**

Sustainable Building Design and Construction Practices

Lonza Biologics Singapore Expansion Tuas, Singapore

acobs was commissioned by Lonza Biologics to serve as Design Engineering Consultant for the Lonza Biologics Singapore Expansion project, which included a three-story Production Building and a twostory Laboratory and Administration Building. Jacobs Engineering Singapore was also responsible for the complete design of dirty utilities inside the building shell and all other facilities in the external shell.

To achieve more sustainable facilities, the project team encouraged the adoption of building designs, construction practices, and environmentally friendly materials throughout the course of the project.

### Sensor to Regulate OA to Maintain CO2 Below 1000ppm

Sensors are used to regulate outdoor air flow rate to maintain the concentration of carbon dioxide below 1000ppm in all non-process AHUs. All process AHUs have a minimum 10 percent OA as per requirement of cGMP.

### Artificial Lighting

Usage of more efficient lighting to minimize energy consumption due to lighting, while also maintaining the minimum lighting level. Singapore Standard – SS530 has been used as general criteria. Most of the areas in the plant fulfil the SS530 requirements.

### **Air-Distribution System**

Usage of more efficient air-conditioned equipment minimizes energy consumption as per the requirements stated in SS530 and SS CP 13. The Air Distribution System is comprised of Air Handling Units (AHUs) and Fan Coil Units (FCUs). Based on the calculation, the percentage improvement in the air distribution system efficiency is 21 percent.

### Efficiency in Lifts and Escalators

All lifts are installed with AC variable voltage and variable frequency drive. Sleep mode features are programmed into all the lifts.

### Application of Renewable Energy Sources in the Building

Based on the electrical consumption in the Lonza plant, the calculated power output from the solar panel is able to achieve an 0.8 percent replacement of the plant's facility load.

### **Reduce Potable Water Use for Cooling Purposes**

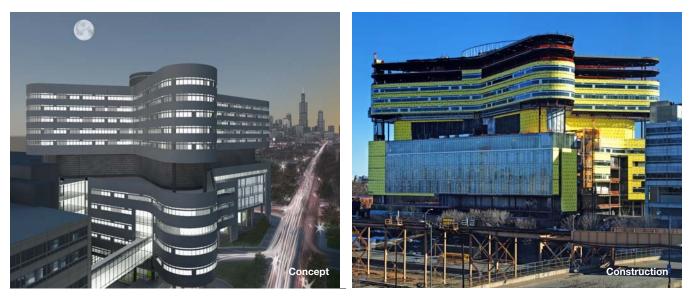
NEWater is used as make-up water for cooling tower. AHU condensate water from the Dryer building is also used as make-up water for cooling tower.

### Limit the Usage of Refrigerants

Reducing potential damage to the ozone layer by implementing the below:

- R-123 refrigerant is used where it has a GWP of 90, less than 100
- Refrigerant leak detector implemented

# **Care and Conservation**



Rush University Medical Center Rush Transformation Project Chicago, Illinois

### Transforming a Medical Center

R ush University Medical Center (Rush) is in the middle of a 10-year project to transform their campus into a state-of-the-art facility. Jacobs has joint ventured with Power Construction to serve as the program manager and construction manager for this Transformation Project.

The Transformation Project includes: a seven-story parking garage, a central energy plant, an underground loading dock, a five-story outpatient facility referred to as the Orthopedic Building, and the East Tower. Scheduled to open in January 2012, the East Tower is a 14-story hospital building that will provide patients with acute and critical care, surgical, diagnostic, and therapeutic services. Rush is pursuing certification from the U.S. Green Building Council for both the East Tower and Orthopedic Building. At publication of this report, both the East Tower and the Orthopedic Building are on track to achieve Leadership in Energy and Environmental Design (LEED) Gold certification.

All of the new structures are designed to conserve energy and water, reduce waste, and utilize sustainable building materials. Rush has followed sustainable design standards from the foundation of the facility and is committed to adhering to those sustainable standards after project completion.

### Sustainable highlights of the Transformation Project:

- Water recycling
- Landscaping
- Regional and recycled materials
- Recycled construction generated debris
- Green roofs

# Saving the Shoreline



U.S. Army Corps of Engineers/U.S. Army Garrison Adelphi Laboratory Center/Department of Defense Blossom Point Army Research Facility La Plata, Maryland

### Preserving the Sustainability of a Wetland

acobs initiated work on this three-year, performance-based contract in September 2008, and is currently completing response actions for two Munitions Response Sites at the Blossom Point Research Facility. Both sites, totaling 9.5 acres (3.8 hectares), are located on a peninsula that extends into the Potomac River. Munitions of explosive concern (MEC) items are present on the publicly-accessible shoreline. Jacobs teamed with local businesses to complete the design and construction of a 565-foot (172-meter) long erosion control structure, and provided annual surface sweeps for MEC. Additional Jacobs services include the preparation of several work plans and reports necessary for regulatory stakeholder approval prior to construction, and the placement of institutional controls and community relations support.

Jacobs supports the Department of Defense's commitment to conduct its environmental programs in a sustainable manner, consistent with Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management. This Executive Order promotes sustainable conditions, "under which humans and nature can exist in productive harmony, that permits fulfilling the social, economic, and other requirements of present and future generations of Americans." The following actions exemplify green and sustainable design, remediation, and construction practices:

- Placement of a revetment structure on the shore using native Maryland stone materials
- Alteration of the preliminary revetment design to preserve the sustainability of a naturally occurring wetland area landward (behind) the revetment
- Environmentally sensitive lubricants were used in the heavy equipment staged on the shoreline to build the revetment
- The revetment design and resulting construction was completed with preservation of the existing land

# **Cost-Effective, New Heating System**



U.S. Army Engineering District, Alaska (USAED) Cold Bay Remediation Project Cold Bay, Alaska

### Added Project Value

acobs was commissioned by the U.S. Army Engineering District, Alaska (USAED) to provide remediation design, installation, and operations and maintenance for the Cold Bay Remediation project, which began in 1996.

Rising rural energy costs are a significant concern for the Cold Bay Remediation project. In order to bring the most value to our client, Jacobs proposed that the existing heating system be upgraded with a low-cost, high efficiency, diesel oil-fired heating system. This solution would reduce total electricity consumption while minimally affecting system productivity. Following client approval, the design, procurement, installation, and commissioning of the new heating system was completed on schedule and within budget.

In September 2009, a new heating system consisting of a direct-vent Toyostovea<sup>®</sup> heater and a 500-gallon (1,900 L) heating-oil tank was installed and commissioned. The heating system capital costs of \$15,000 (€11,300; £9,800) were recovered within four months following the system upgrades. The current cost savings per year is estimated to be \$55,200 (€41,700; £36,000), with projected Jacobs Value Plus savings of \$442,000 (€334,000; £288,000) over a period of eight years, which is the current expected life cycle of the HVE system.

# Leading The Way



**Oregon State University** Energy Center Corvallis, Oregon

### A LEED Platinum Energy Center

acobs provided design services to Oregon State University in Corvallis, Ore., for their new, on-campus Energy Center. The Energy Center replaced the existing heat plant that provided steam to campus, and includes combined heat and power generation capability.

The building is on target to achieve the United States Green Building Council's Leadership in Energy and Environmental Design LEED Platinum certification when complete. The Central Heating Plant (CHP) meets the requirements of the Oregon State Energy Efficient Design Program.

# Smart Groundwater Monitoring



U.S. Army Corps of Engineers, Alaska District (USAED) Kodiak Airport Staging Area Biosparging Design Treatability Study Kodiak, Alaska

### Minimizing the Energy Footprint

acobs was commissioned in 2006 by the U.S. Army Corps of Engineers, Alaska District (USAED) to provide design, subcontracting, construction oversight, system operation, and ongoing groundwater monitoring for the Kodiak Airport Staging Area (ASA) Biosparging Design Treatability Study.

The ASA biosparging test sought to enhance in-situ biodegradation of residual diesel fuel at the water table by injecting air in eight wells screened below the water table. The test incorporated sustainable elements where possible and minimized its energy footprint in two specific ways. First, power was obtained by installing 2,300 feet (700 meters) of power-transmission cable in the airport utilidor system, avoiding the capital and fuel costs and the complexity of an on-site generator for this 16-month test. Secondly, the biosparging scheme made use of pulsed operation, enabling a relatively small compressor to supply air to six injection wells sequentially rather than simultaneously.

# Sustainable Site Selection

Successful Brownfield Redevelopment

Gardena Transit Authority Gardena Transit Administration Facility Gardena, California

he City of Gardena Transit Administration Facility operates the transit system for the City of Gardena, Calif. As a part of a design-build contract with Pinner Construction, Inc., Jacobs was commissioned to design a campus facility of four buildings, which would serve as the administration and maintenance hub for the City of Gardena bus system.

Selection of the site was a significant sustainable achievement for the project. Because it was a brownfield site, the City was required to contain and remove any hazardous substances found on-site. The project earned Sustainable Site Credit 3, Brownfield Redevelopment. The City of Gardena received a grant from the EPA to complete site mitigation, diverting concrete and asphalt from a landfill.

The project has been certified LEED NC v2.2 Silver.

# Additional sustainable elements incorporated into the project include:

- Use of low-emitting, local materials
- Use of materials with recycled content
- Maximized use of daylight/natural light throughout facility
- Occupant controlled lighting and temperature systems
- Photovoltaic system (generating 8.23 percent of the energy required for the building)
- Approximately 89 percent of all project construction waste, including concrete and asphalt, were diverted from a landfill

# **Commitment to Excellence**



Port of Oakland Oakland International Airport Terminal 2 Oakland, California

### LEED Silver Certification Achieved

n December 2009, the Port of Oakland Terminal 2 Project at Oakland International Airport (OAK) in Oakland, Calif., was awarded Leadership in Energy and Environmental Design (LEED<sup>\*</sup>) Silver Certification by the U.S. Green Building Council. Oakland's Terminal 2 is the first airport terminal in the United States that has achieved LEED Silver certification. The award represents a culmination of effort by the Port staff, consultants, and contractors, including Jacobs and Turner Construction, who actively implemented the Port's Sustainability Policy while working on the Terminal 2 project.

The Oakland Board of Port Commissioners adopted a Port Sustainability Policy in November 2000. The policy effectively implemented a sustainable development strategy as an overarching principle guiding the Port of Oakland's operations and development programs, with the goal of making the Port a sustainable public agency and business enterprise. When OAK's Terminal 2 project came about, it offered a significant sustainability opportunity to the Port.

Now, almost 10 years later, success is evident with the LEED Silver certification of the Oakland Terminal 2 Project. The project achieved this certification for conserving energy, materials, and water; and for incorporating a variety of other green design and construction features.

Jacobs served as the architect of record and prime design firm on the project. In conjunction with the airport and a team of subcontractors, Jacobs maximized use of sustainable materials and processes. Sustainable highlights of the project include:

- Energy efficiency measures that exceed California energy standards by 25 percent and reduce carbon emissions by more than 211 tons per year
- Diversion from landfills of more than 80 percent of jobsite waste by recycling or reusing scrap drywall, metal, plywood, carpet, and other materials — saving millions of dollars in disposal costs
- Water conservation measures yielding 24 percent less water use than in a similar conventional building
- Selection of paint, carpet, glue, cabinetry, and plywood products that emit few volatile organic compounds (VOCs), and are therefore better for the environment and the traveling public than conventional products
- An advanced stormwater treatment system that channels runoff into plantfilled ditches, or swales, providing a natural filtering system that removes pollutants before the water reaches the San Francisco Bay
- Innovations such as a "Green Housekeeping" program to reduce environmental and health impacts of cleaning products and chemicals used in the terminals

Through effective application of a sustainable development strategy, the Port of Oakland has effectively developed a 'High-Performance Building' that is healthy for OAK passengers and workers.

## Site Evaluation



**Department of General Services, State of California** Central Plant Renovation Sacramento, California

Renderings courtesy of Nacht & Lewis Architects

## Increasing Efficiency and Functionality

acobs provided agency construction management services for the California Department of General Service's new Central Plant. The scope of work included assistance during the Design-Build bid package preparation (RFP Development) and the Design-Build support phase (design and construction).

The new Central Plant has been designed to achieve Leadership in Energy and Environmental Design (LEED) Gold certification from the U.S. Green Building Council. At the publication of this report the project is 95 percent complete and no official certification has been awarded.

Two sites were originally planned to accommodate construction of this project. Keeping sustainable elements in mind, Jacobs assisted the State and the project team with evaluation of use of one site, thus significantly reducing energy and construction costs. Overall operational efficiency and functionality were also increased by this decision.

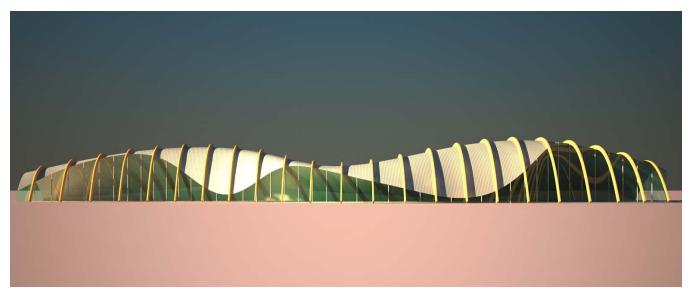
#### Some key sustainable features of the project include:

- The Cooling Tower uses chemical-free, environmentally friendly water treatment
- The facility has a stepped-back facade for neighborhood scale
- Bicycle storage, staff showers, and locker facilities on site
- Reclaimed water for toilet fixtures
- An ultra-high-efficient, all-variable speed chiller plant
- Photovoltaic panels to provide electrical power for office support areas
- Steam-powered electric generator to provide emergency cooling and load leveling during energy emergency conditions
- Solar heating for domestic and space heating hot water
- Advance M-Cycle evaporative air systems for office spaces to reduce energy use by effectively applying psychometric energy from the atmosphere
- High-performance, low-E glass new steam heating plant that will increase the overall heating system operating efficiency
- Low energy direct-indirect lighting fixtures, automatic light fixtures with dimming control, and maximization of daylighting



Renderings courtesy of Nacht & Lewis Architects

# Sustaining the Arts



Havering City Borough / Havering City Council Myplace Harold Hill, Romford, Essex, United Kingdom

### New Carbon Neutral Youth and Community Facility

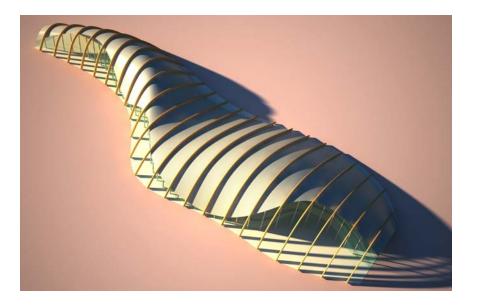
yplace is a multi-million pound Government program to deliver world class facilities for and by the young people who will be using them. In March 2009 Havering City Council (HCC) received a grant under the Myplace program, to fund the youth-led development of a new center on a site adjacent to an existing leisure center in Harold Hill, Romford. The development is an integral part of a wider regeneration initiative aimed at providing sustainability for future generations.

In June 2009 Jacobs was appointed to the project in a multi-disciplinary capacity. Our role has been to provide design, coordination, and technical services, in conjunction with the young people of the community, for the production of a world-class facility to be used by the youth of the Havering City Borough.

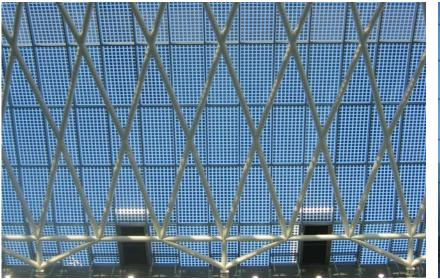
The result is the brand new development of a carbon neutral Youth and Community facility that will act as an exemplar sustainable project for the Borough. It is targeted to achieve BREEAM Excellent status. The scheme has

called for a truly holistic multi-discipline approach to ensure the building is designed to achieve this ambitious target.

When completed, the center will include a dance theater, recording studios, and state-of-the-art community media production facilities. The carbon neutral design is planned to enable the building to generate enough on-site renewable energy so the scheme has zero net carbon emissions.



# **Consolidation and Conservation**





London Borough of Hackney Hackney Service Center London, England, United Kingdom

## Designing a High-Performance Building

acobs provided design services to the London Borough of Hackney for its new 15,000-square-meter (160,000-square-foot) customer service center and offices. Hackney Service Center brings the Council's core services together in a single central location, making it easier and quicker for local people to access their services. One of the planning conditions imposed was to achieve BREEAM Excellent status. BREEAM is the world's longest standing and most widely used environmental assessment method for buildings. It sets the standard for best practice in sustainable development and demonstrates a level of achievement. It has become the vocabulary used to describe a building's environmental performance. In addition the building also exceeded by some margin the statutory requirements for energy consumption and the EPC (Energy Performance Octificate) rating, which further demonstrates the very high performance of the building fabric and engineering systems.

The building was one of the first to be designed under the revised UK Building Regulations Part-L 2006 requirements, and was also subject to the further carbon emission reduction requirements of the Greater London Authority.

Design of a high performing building fabric and use of natural daylight were key elements in reducing loads on the building services. The exposed concrete frame construction affords the benefit of thermal mass, which coupled with a displacement ventilation system and raised peak internal temperature set point (25oC) helps reduce cooling loads. Temperatures during peak summer conditions are controlled via under floor fan coil units discharging to the floor plenum. Carbon emissions are actively reduced by a number of technologies, including biomass boilers serving the base heat load, a laminated 500-square-meters (5,300-square-foot) photovoltaic array set in the atrium glazed roof, which also provides solar shading, and daylight dimming of internal luminaries.

Jacobs has provided the local authority with design services for other commissions, including the Grade II listed Hackney and Stoke Newington Town Halls.

# **Enhancing the Environment**





Department of Energy Bechtel Jacobs Company LLC, DOE Oak Ridge Reservation Joint Venture Oak Ridge, Tennessee

### Waste Disposition and Transportation **Process Integration**

n 2009, the Bechtel Jacobs Joint Venture developed and commissioned, at the request of U.S. Department of Energy (DOE), a group to provide coordination among waste generators on the Oak Ridge Reservation. The mission of this newly formed team is to serve as the waste and transportation integration team for multiple projects being performed under the American Recovery and Reinvestment Act.

The Bechtel Jacobs JV is supporting and integrating waste disposition and transportation processes for 10 projects of varying sizes at three separate and unique sites within the DOE Oak Ridge Reservation. These three sites are managed by separate entities, with whom the Bechtel Jacobs JV coordinates. The sites and site managers include the Oak Ridge National Laboratory (ORNL), managed by University of Tennessee and Battelle, the Y-12 National Security Complex, managed by Babcock and Wilcox and Bechtel, and the East Tennessee Technology Park (ETTP), managed by Bechtel Jacobs.

Many of the buildings on the sites have been there for 60 years or more. Some are at the end-of-building-life-cycle and pose health and safety risks to people and the surrounding environment. The Bechtel Jacobs integration activities ensure all materials are disposed of in a safe and compliant manner.

These 10 projects will encompass the generation of approximately 300,000 cubic yards (230,000 cubic meters) of waste, including building materials, soils, and process equipment. Approximately 23,000 shipments of waste will be transported to the Environmental Management Waste Management Facility (EMWMF) located within the Oak Ridge Reservation.

## Additional support services provided by Bechtel Jacobs Integration Team include:

- Customer service to ensure all three project sites are equally supported through preparation and implementation of waste disposition,
- Serving as advocate for all projects to strengthen lines of communication and bring subject matter experts together,
- Suggest improvements that can increase efficiency and reduce schedule to waste generators and the disposal facility staff,
- Review operations processes and offer recommendations for streamlining those processes and procedures, such as application and permitting submittals.

The Bechtel Jacobs integration team works to meet the DOE's goals of activity coordination and reduction of project inefficiencies, reduction of transportation costs, and an enhanced safety environment for generators and operating staff.

# **Restoring Balance**



Copper River Watershed Copper River Watershed Stormwater Pollution Analysis Cordova, Alaska

### Improving Local Aquatic Habitat

he watersheds surrounding the City of Cordova, Alaska, contribute to the larger Prince William Sound watershed, a critical and productive habitat for salmon and other aquatic organisms in Alaska. The Copper River Watershed Project (CRWP) commissioned Jacobs to identify the main causes of polluted stormwater runoff in Cordova and evaluate alternatives for addressing each problem in order to sustain and improve the conditions of the local aquatic habitat.

Jacobs reviewed best management practices, engineering solutions, and community involvement activities that could help reduce stormwater-related pollution at nine locations and suggested preferred alternatives for each site. The CRWP is in the process of using these recommendations to apply for grants to implement pollution-reducing measures in their community.

In 2009, the CRWP received a nearly \$1 million (€760,000; £650,000) grant from the National Oceanic and Atmospheric Administration (NOAA) under the American Recovery and Reinvestment Act for restoration efforts in one watershed. Jacobs continues to support CRWP's long-term goals for implementing new technologies to better filter stormwater runoff as part of an overall watershed improvement plan. Innovative solutions and collaborative efforts drive successful results, from implementing best practices and efficiency efforts to conservation and restoration initiatives. Our multi-discipline sustainable business processes and models deliver effective business returns to our clients, enhance their performance, and create a positive environmental impact in the world.

# LIVING IN OUR COMMUNITIES We See Sustainability Differently



The work Jacobs does directly relates to communities. Our projects impact infrastructure, buildings, the environment, and more. But at Jacobs, our work goes beyond projects.

People are our greatest asset. Our employees not only take care of each other, they are invested in caring for their communities as well. It is an approach that is not only embedded in our business; it is embedded in our culture. Through their many and myriad volunteer efforts, our employees share their time and talents to create meaningful change in their communities and around the world. The following pages are only a small sampling of the many inspiring ways in which our employees contribute to sustainable communities.

#### United Way Fundraisers in Jacobs' U.S. offices



Our U.S. employees pledged more than \$1.2 million (€906,000; £780,000) to United Way organizations across the country during the Fall 2009 campaign. From dunking booths to skeleton races, approximately 2,500 staff and craft employees in 71 Jacobs offices gave back to their communities through creative fundraisers.



#### Fort Worth Canstruction<sup>®</sup> for Tarrant County Food Bank



In 2009, more than more than 130 employees from our Fort Worth, Texas office participated in the local Canstruction® competition benefiting the Tarrant Area Food Bank. Canstruction® is a foundation of the Society for Design Administration and is a trademarked design-build competition. Over a six month period, the Jacobs team raised more than \$4,000 (€3,000; £2,600) and constructed the "Tin Man" from the Wizard of Oz.



### Anchorage, Alaska office





Employees in our Anchorage, Alaska office participated in many community events in 2009, including the annual Alaska Ski for Women event, a Bike-To-Work day, a Split-the-Pot contest to raise money for a local homeless shelter, and the Food Bank of Alaska's Thanksgiving Dinner Food Drive.

#### Water Aid: Rivers & Coastal Team Walk



On June 6, 2009, Jacobs employees on the Glasgow Rivers and Coastal team climbed to the summit of Garbh Bheinn in Ardgour to raise money for WaterAid as part of the Trail100 challenge. The team raised more than £500 (\$767, €579).

#### **Dare to Wear it Pink**



On October 31, 2009, several Jacobs offices across the United Kingdom dared to "Wear It Pink" in support of the the Breast Cancer Campaign. Employees wore pink, made a donation, and raised more than  $\pounds1,400$  (\$2,150,  $\pounds1,620$ ).

#### **Red Nose Day for Comic Relief 2009**



On Friday March 13, 2009, Jacobs offices across the United Kingdom took part in various fundraising activities in aid of Comic Relief's Red Nose Day. Comic Relief funds projects that help people to help themselves across the UK, Africa, and throughout some of the world's poorest countries.





Since 1992, our Houston office employees have partnered with Roy P. Benavidez Elementary School in Houston, Texas. Our employees have initiated many programs, including recycling, a community garden, pen pals, Junior Achievement program, holiday food and toy drives, and more. The Partnership recently received the Business Partner Academic Impact Award from the Texas Association of Partners in Education for the 2009-2010 school year.

#### Business/School Partnership: Jacobs Houston and Roy P. Benavidez Elementary School



#### Jacobs Employee Organizes 26th Charity Concert

On April 25, 2009, Cerith Owens of the Neath office organized his 26th concert in aid of charity. This year's chosen charity, the 'Soldiers, Sailors, Airmen, and Families Association (SSAFA) Forces Help' supports exservicemen and women and their families. The concert was held at Theatre Elli in Llanelli, Wales, and raised a total of £1,900 (\$2,900; €2,200).

#### **Engineering Education Scheme**

Jacobs' employees are active participants in the Engineering Education Scheme (EES), which helps to provide secondary school students in the U.K. with an in-depth experience of science, engineering, and technology at a professional level. Students can then make informed decisions about their further education and career paths.

#### **Charleston Office Haiti Relief Bake Sale**

After the earthquake in Haiti, Jacobs' Charleston, S.C. office organized a "Haiti Relief Bake Sale," raising \$826 ( $\in$ 624; £539) for earthquake survivors. Though the baked goods were soon gone, donations were collected for one week. This effort touched more than just our staff. Mike's Catering, the on-site service provider in Charleston, also made a donation, and the office's scaffolding subcontract partner contributed as well. All proceeds were donated to Save the Children, an independent organization creating lasting change in the lives of children in the United States and around the world.



#### **Jacobs Childrens' Calendars**

To raise awareness of our BeyondZero<sup>\*</sup> culture of caring, Jacobs offices in Southern Europe recently held a children's calendar competition across the region. Overall, approximately 70 drawings were entered in the contest. Calendar sales raised €2,000 (\$2,650; £1,730), which was donated to the Make-A-Wish affiliates in Belgium, France, Italy, and Spain. The Make-A-Wish Foundation grants the wishes of children with life-threatening medical conditions to enrich the human experience with hope, strength, and joy.

#### Volunteer Firefighters: Columbus, Nebraska

Two employees from our Nebraska offices have served many years on volunteer fire departments for their local communities.

Todd Szatko, electrical lead, has been a member of the WY Bissel Company for the Columbus, Nebraska Volunteer Fire Department for more than five years. Larry Rinehart, safety manager, has served as a volunteer firefighter for more than 37 years and has held many positions within the department. He currently serves as a State of Nebraska fire service instructor for volunteer fire departments.



#### Women's Collaborative: Giving Back to the Community

Last year, members of the Northern California Chapter of the Jacobs Professional Women's Collaborative started a toiletry drive in our Sacramento, Calif., office. Donations were made to Loaves & Fishes, and Women Escaping a Violent Environment. The effort was so successful the group has committed to making this an ongoing drive. Jacobs employees around the world make invaluable contributions to the cities and towns where we live and work. We continually demonstrate a genuine desire to build community connections and create a positive social and environmental impact in the world. Reaching out and caring for people and communities illustrates our sustainable philosophy in action. As our people care for others, we care for them through the development of, and commitment to, a sustainable workplace.

# We See Sustainability Differently



We are dedicated to keeping our employees safe, healthy, and working toward bright futures. Therefore, we incorporate sustainable practices into our internal operations.

sustainable workplace means much more than working in a green building. Sustainability at work crosses many lines: safety, ethics, diversity, community involvement, and more. We believe all of these factors are significant contributors to creating a sustainable environment at work. The following pages illustrate some of the best practices we use to create a sustainable workplace at Jacobs.

#### **BeyondZero**°

Safety is a top priority at Jacobs. It's more than a policy manual or list of do's and don'ts. BeyondZero<sup>\*</sup> is our program that promotes a culture of caring at Jacobs. BeyondZero<sup>\*</sup> 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<sup>\*</sup> program, two to three percent of 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, family, and friends.

# We're ostepping up out out of the set of the







#### **BeyondZero**° in Action

Our BeyondZero<sup>\*</sup> program was seen in action in our offices worldwide last year. One example took place in Italy. Safety and sustainability were top priorities for our Milan offices during their recent move. Our office staff moved to a recently renovated building within the same complex where they were previously housed. To reduce disruption, move-in activities took place during the shutdown of the offices over the winter holidays.

The office move was coordinated by a dedicated team, led by the HSE manager. The following measures were taken to ensure the safety of all involved during the move process:

- Check of lift capabilities
- Check of proper lighting during move-in
- Availability of additional fire extinguishers
- Communication procedures in place during material handling in both locations (via mobile phones)
- Availability of technicians (Electrical, IT, etc.) to support the task force
- Safety instructions revised for new offices

Sustainability was also top-of-mind during the move. Paper, cardboard, plastic, and more were sorted for recycling. Folders and binders were cleaned and made ready for re-use, rather than disposal.

Our Milan office move was a great success. More than 180 employees executed an injury and incident free operation in a timely manner. Routine office activities resumed safely and efficiently on the first day after the winter holiday break. During the move, over 1,900 boxes were packed. More than 600 folders were recovered for re-use, and close to 20,000 kg of paper were recycled.





Our Milan office made safety and sustainability top priorities during their recent move.

#### **Benefits, Education, & Training**

People are our greatest asset. That core value underscores our knowledge that our success comes from our people. We depend on our employees to carry on the company values. We strive to ensure all employees have a safe, sustainable, ethical work environment.

Our quality benefits package helps employees and their families stay healthy, enjoy time off, provide for their financial future, and allows them opportunities to save money.

In addition to a strong benefits package, we have other employeecare programs in place. Those programs include education, training, counseling, prevention, and risk-control programs to assist workforce members, their families, or community members regarding serious diseases.

Happy, healthy employees are empowered to be the best they can be in their careers. Various Jacobs programs, from ongoing careertraining to performance reviews, ensure our employees have every opportunity to maximize their potential. Staff employees receive a written performance appraisal and career development plan annually. Evaluations are completed around a set of Jacobs performance dimensions such as safety, technical and functional skills, and customer focus.

The performance appraisal process allows employees and managers to review employee performance and development while providing a final rating for the review period.

Performance Appraisal Process
Self Evaluation
Manager Evaluation
2nd Level Manager Review
Human Resources Review
Face to Face
Employee Sign Off
Manager Sign Off
Complete



This year we completed implementation of a Talent Management System that houses Talent Profiles, Development Plans, Performance Appraisals, and Succession Plans. Metrics will be available next year that monitor the Performance Appraisal process.

# Our benefit programs typically include:

- Retirement benefits
- Employee stock purchase plan
- Health benefits
- Disability benefits
- Life and accident insurance
- Flexible work schedules
- Paid holidays
- Paid time off
- Tuition reimbursement
- And much more

#### **Jacobs College**

Established in 1993, Jacobs College is another vehicle through which we offer educational opportunities to our employees. Jacobs College provides 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 participants are immersed in a learning atmosphere that leads to a better understanding of our core values, which improves their ability to serve our clients and train and lead others. Through a deeper understanding of our core values, these employees perpetuate our commitment to sustainable development.

With Jacobs College, various other training programs, attendance at seminars, and more, Jacobs employees averaged 11.76 hours of development training per person in 2009.





#### The goals of Jacobs College are to:

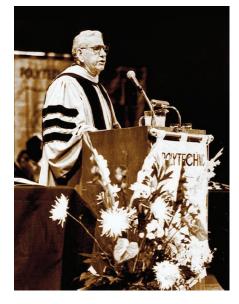
- Improve leadership talent
- Share our organization's culture and success factors
- Institutionalize success by passing on lessons learned
- Increase our ability to provide greater value to our clients

#### **Jacobs Foundation Scholarship**

The Dr. Joseph J. Jacobs Global Scholarship Program was introduced 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. Dr. Jacobs showed a particular devotion to education and recognized the significant value of making higher education attainable for any child who sought it.

Over 400 applications from around the world were submitted last year and in early 2010 we announced the 20 students who were each awarded a \$3,000 (€2,250; £1,960) academic scholarship. We are delighted to offer this opportunity again in 2010 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.



Our founder, Dr. Joseph J. Jacobs.

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Home About Jacobs	Business Support	People / myHR	Safety	Business Development & Sales	Financial Hanagement	Operations & Project Execution	Travel	Work	L
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#### **Sustainable Initiatives**

We focus on ways to be more cost effective, increase efficiency, and incorporate sustainability into our everyday lives, at work and at home. There are many examples of how we do this. Efforts made by individual employees and specific offices, as well as companywide initiatives, all contribute to our ongoing efforts to enhance sustainable practices within our company.

#### **Print/Paper Reduction Program**

We have a responsibility to deliver to our clients the most efficient, value-added, and cost-effective services possible. We also have a responsibility to ourselves to determine the areas where we can streamline our processes and increase efficiency. A cohesive print management program does all that and then some; it contributes to a more sustainable environment.

Jacobs implemented a print management program in late 2008. Since that time, the program has had a significant impact on our sustainable footprint, as well as delivering cost savings to the company. We have saved around 50 million pages, which is equivalent to 100 thousand reams of paper, or 250 tons, or 6,000 trees. We've also eliminated over 2,000 direct printers and moved those users to shared devices. That adjustment, in addition to our power reduction program, saves 2 million kWh/year. That's enough energy to power more than 200 homes.

Less paper used means less paper produced; less energy used, less energy produced — all of which has a positive impact in reduction of CO<sub>2</sub> emissions and effluent output. We've also made a concentrated effort to switch our paper sourcing to green production or recycled paper wherever possible, and now have achieved environmental accreditation in some of our geographies.

All print devices we purchase adhere to the standards for sustainable materials and are certified to comply with all appropriate sustainability codes. Our disposal methods also follow industry and regulatory guidelines on the environment.

	Annual Savings Print Reduction					
Unite	Pilot: ed Kingdom	Estimated: North America	Total			
	x 300	x 1,000	x 1,300			
	20 Tons	65 Tons	85 Tons			
СО	2 60,000 lbs	200,000 lbs	260,000 lbs			
USD	1.1 Million	7.5 Million	8.6 Million			

#### **Computer Desktop Environment**

Jacobs has adopted a variety of methods to ensure our desktop environments are as environmentally friendly as possible. We procure our desktops and laptops from environmentally aware vendors. The power consumption ratings of the devices fall into the lower banding levels, and we use low power consumption monitors on the desktop. Asset management is proactively employed to ensure the need for purchase of additional units is kept low.

In addition, we have automated systems in place to ensure shutdown and conservancy of power on all devices not in use. We recycle whenever possible through environmentally friendly vendors, and are in possession of certification adhering to the local laws for disposal.

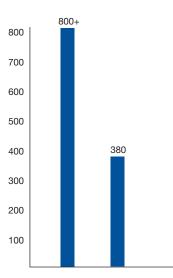
We are also in the planning phases of Windows 7 deployment, which should have a positive impact on power consumption.

#### Server and Data Center Delivery

Data centers and servers consume large quantities of power, and therefore produce large volumes of heat. To dissipate that heat, cooling systems that also consume large quantities of power are used, and an undesirable cycle is created.

Jacobs' solution to this dilemma is to reduce power consumption, and therefore reduce the cooling required. Through the use of server virtualization, we have reduced the number of our physical servers included in this program from more than 800 to 380.

Implementation of this process allowed us to achieve a thermal btu and subsequent power reduction equivalent to the output of a small local generating station. All of these efforts contribute to a reduction in our carbon emissions. We are working to reduce power and energy consumption companywide.



**Physical Server Reduction** 

#### **Sustainable Communications**

In recent years, we've made considerable investment in modern communications infrastructure that maximizes efficiency. We have in place data networks, digital voice systems, voice conferencing, video conferencing, and Web-based collaboration tools with virtual meeting space. All of these technologies contribute indirect sustainable benefits to our company, including:

- Reduced car travel through the use of virtual meetings
- Reduced air travel through increased use of virtual space
- Work share in overseas offices negating the need to travel

In many instances, our clients mandate provision of these technologies before they award their business. We have an excellent track record of meeting such client requirements.

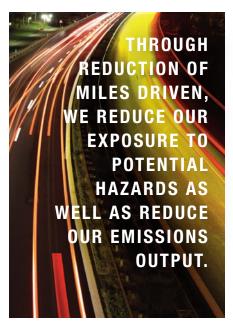
#### **Miles Driven**

We work hard to reduce our total amount of miles driven. Through this reduction, we reduce our exposure to potential hazards as well as reduce our emissions output.

We have two metrics for benchmarking Motor Vehicle Incidents (MVIs). The first is D-1, an internal metric that is a measure of incidents with an injury or potential for injury. The second is the DOT Crash Index (DCI), and is an external metric measured by the U.S. Federal Dept. of Transportation. DCI is a common measure in the transportation industry.

Most of our peer competitors measure MVIs only from a risk management/insurance loss perspective. At Jacobs, we look at MVIs in relation to safety rather than risk management, and therefore are not able to benchmark ourselves against our peers. We adopted the DCI so we could compare our MVI performance against a recognized, standardized metric.

To calculate and benchmark our DCI metric, we capture our miles driven each year from use of personally owned vehicles used on company business, rental vehicles, client vehicles, and company owned or leased vehicles. We then measure and benchmark performance to compel improvement in driving safety. The mileage data is used to understand our driving habits and behavior, which helps identify opportunities to reduce the number of trips and miles driven.



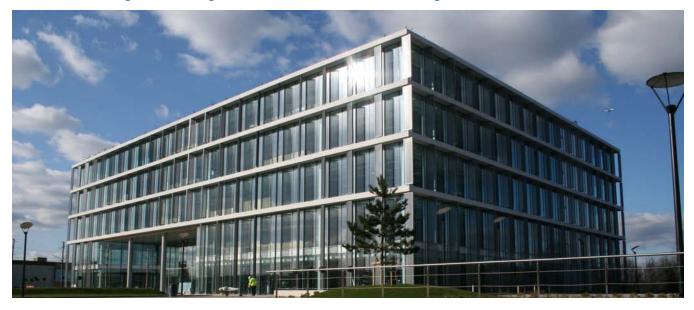
#### Santa Ana, California Office



acobs' 4 Hutton Centre, 4th Floor office in Santa Ana, Calif., is our first office in North America to receive a 'Gold' rating under the United States Green Building Council's Leadership in Energy and Environmental Design (LEED)-Commercial Interiors rating system.

As we stated in our Sustainability Report last year, the relocation of our staff from our existing Cypress, Calif., office to Santa Ana presented the opportunity for us to apply our green design expertise to our own office space. Some sustainable elements incorporated in the new office space include: Forest Stewardship Council (FSC) Certified Wood for millwork and systems furniture (workstations); low-emitting paint, adhesives, wood, and carpet; rapidly renewable materials such as Kerei Board and linoleum flooring; and Ultratouch Recycled Cotton Insulation in the walls and specific ceiling areas for acoustical properties.

Since our staff moved into this office in February 2009, it has served as the centerpiece of a 'Green Education Program' for Jacobs.



#### Winnersh Triangle, Reading Office, Berkshire, United Kingdom

n May 2010, about 1,000 Jacobs employees relocated from two office locations to a single purpose-built development at Winnersh Triangle in Reading, Berkshire, United Kingdom. With five floors providing 133,000 square feet, this is the largest Jacobs office in the UK.

The sustainability aspects of the design, construction, and operation of the new building are being assessed against the standards specified by the Building Research Establishment's Environmental Assessment Method (BREEAM), which calls for a high level of sustainability performance across multiple areas, including Energy, Transport, Waste, Materials, Water, Management, Land Use, Ecology, and Health & Well Being.

The base build phase of the project received a BREEAM "Very Good" rating. BRE submittal for the fit-out phase of the project will take place this summer, and we expect to achieve another "Very Good" rating.

When we reported on this project in last year's Sustainability Report, we noted the sustainability features included in the base build phase of the project.

Over the course of the year and throughout the fit-out phase of the project, the following additional sustainable elements have been introduced:

- Lighting: Additional PIR controlled lighting zones.
- Heating and Cooling: Additional occupant controls for heating and cooling.
- Cycle Parking: The provision of covered dedicated cycle parking spaces within the Basement has been enhanced to provide secure cycle parking for more than 100 cyclists.
- Showers: The provision of dedicated shower, changing, and locker facilities and a dedicated drying room within the basement have been provided and upgraded from the base build.
- Blinds: The provision of blinds to control glare to all windows to occupied areas. All cellular meeting rooms also have individually operated blind control.
- Acoustic Performance: Enhanced ambient noise levels for offices, meeting rooms, and workstation areas.
- Office Furniture: The furniture supplier is certified to the environmental management system ISO 14001 and certified with the Forest Stewardship Council (FSC), as well as numerous other certifications of this type. Many of the furniture components are almost 100 percent recyclable. For example, the task chairs are 96 percent recyclable and are made with more than 40 percent recycled materials.

The building will operate in adherence with the standards and procedures of Jacobs' Environmental Management System ISO14001.





#### **Dublin, Ireland, Office Sustainable Features**

ur Dublin office implemented its Office Environmental Management Plan in 2009 with a continuum of sustainable initiatives being rolled out, tested, and absorbed into the office culture. The offices are trashbin-less with segregated communal waste containers for food, recyclables, confidential shredding, and general waste. The office kitchen/cafeteria has ceased use of styrofoam and non-recyclable plastic cups and plates. Twenty printers have been decommissioned; double-sided printing is automatic on units that remain in service. Bathrooms in the Dublin office feature dual-flush toilets and state-of-the-art Dyson hand driers.

Many employees commute to work via bicycle on Dublin's public bike lanes. The office has installed men's and women's shower facilities and bike racks, and also has conducted (in concert with Irish Bike-to-Work Ltd.) a special tax-free bike-purchasing program to encourage this carbon-friendly alternative to driving.

The Dublin office site is adjacent to Sandymount Strand, a stretch of beach on the Irish Sea, just south of Dublin City Center. Low-partition work cubicles are arranged to ensure all staff have access to natural daylight and views.

#### Dublin, Ireland, Office Environmental Business Unit Undertakes Benchmarking Study

Out of more than 20 independent standards that exist today to guide sustainable planning, design, and construction, and to measure the resultant energy performance throughout the project life-cycle, two maintain the forefront position: Leadership in Energy and Environmental Design (LEED) and Building Research Establishment Environmental Assessment Method (BREEAM).

The Environmental Business Unit (EBU) of Jacobs' Dublin office is exploring the inner workings of both schemes to better understand their strengths and weaknesses. The exercise is providing hands-on LEED and BREEAM training for the wider Dublin team, and the results are bringing improved levels of sustainability services to our clients.

The EBU's study has found the two schemes have much in common. Upfront involvement of the BREEAM assessor or LEED-accredited professional maximizes a project's final green rating. Both systems drive market improvements in building practices and development of eco-friendly materials. Measurement criteria for each system constantly evolve in accord with developing codes and legislation. Clear points of correlation exist in land use, recycling, and construction waste management. Both schemes require minimum actions prior to assessment, are flexible, and most critically, emphasize energy performance.

Understanding BREEAM and LEED broadens Jacobs' capabilities in the marketplace and strengthens our role as sustainability experts.

#### **BREEAM Categories**

Water Energy use Materials Health and well being Transport Land use Ecology Pollution Management Waste

#### **LEED Categories**

Water Efficiency Energy and Atmosphere Materials and Resources Indoor Environmental Quality Regional Priority Sustainable Sites Innovation in Design



#### **Glasgow, Scotland, Office Environmental Action Plan**

n June 2008, a serious recycling program was introduced to the existing Office Environmental Action Plan (OEAP) in Jacobs' Glasgow, Scotland office. That recycling program, designed to meet the office's environmental objective of reducing landfill volumes, has been a tremendous success.

The approximately 900 employees in the Glasgow office now recycle paper, cardboard, glass, plastic, aluminum, steel, toner cartridges, electrical equipment, and fluorescent light tubes in addition to already recycled IT equipment.

The office Establishment Manager works closely with their local recycling provider, who supplies monthly waste measurements, to track the amount of waste collected for recycling.

The recycling program has been so successful that the Glasgow office has seen an approximate 80 percent per quarter reduction in general, landfillbound waste.



#### Jacobs Initiative Green: Promoting Green Practices in Denver, Colorado

acobs: Initiative Green (JIG) is a local team within the Denver, Colorado office that promotes greener practices in the workplace. The team is working hard to make the office more environmentally conscious, and their efforts are paying off. Our downtown Denver office was named "Connector Employer of the Month" by the Downtown Denver Partnership for one month in 2009.

Our Denver JIG team is focused on more than green transportation. The team met with building managers to discuss more energy-saving lighting options and to advocate installing bicycle racks for employees to use. The Denver office has also expanded their recycling system to include materials in addition to cans and office paper (i.e., plastics, glass, cardboard, newspapers, and magazines).

JIG also posts "Green Tips" on a TV monitor in the office, sends monthly "Green Update" emails to Denver office employees, and sponsors lunch and learns to educate the workforce on ways to be more efficient, cost-effective, and eco-friendly. As we cultivate a thriving, sustainable workplace, we encourage our employees to partner with us to identify solutions and opportunities for improvement. At Jacobs, we promote collaboration and creativity in our sustainable efforts both internally and externally. By engaging our employees, we have mobilized a powerful resource that will help our company achieve costeffective, sustainable growth. We are focused on identifying innovative methods that create value for our business, shareholders, clients, employees, and the environment.

# OUR SUSTAINABLE COMMITMENT

We See Sustainability Differently



# 6 OUR SUSTAINABLE COMMITMENT

ur core values are the unshakable foundation that furthers our growth as a business as well as our commitment to sustainable development. This comprehensive philosophy is vital to making an effective and ongoing contribution to sustainable development in our world. Today's unpredictable economy and the evolving marketplace bring not only myriad challenges, but endless opportunities. We must remember that possibility and opportunity do not negate responsibility. We have a responsibility to all of our stakeholders to run an ethical, cost conscious, and sustainable business.

We are committed to the ongoing exploration of all the possibilities that present themselves through our approach to sustainability. From energy-saving measures to waste minimization to better materials handling, we work together with our clients to design and construct a safer and more sustainable environment.

Additionally, we are committed to continue reporting on and disclosing our economic, environmental, and social performance through the Global Reporting Initiative (GRI). We continue to look for ways to advance our metrics and sustainable efforts, and to help our clients progress theirs.

As we move forward, we know the best thing we can do for our clients, shareholders, employees, and all of our stakeholders, is to grow and remain consistent. Business practices that are not only good for business, but good for the environment, are good for all of us.

Growing a strong, lasting business allows us to exceed our clients' expectations. As our clients also grow and attain success, they pass on the benefits achieved by meeting their sustainable project goals in their own communities, no matter where they are.

It's all connected. We are all connected. The basic facets of our core values — People, Relationships, Growth — remind us of that fact every day. At Jacobs, we see sustainability differently.

# We See Sustainability Differently

# We See Sustainability Differently



We utilized the Global Reporting Initiative (GRI) Sustainability Reporting Guidelines to serve as the framework within which we gathered and reported data for this 2010 Sustainability Report. This process enhances accountability and reinforces the global aspects of this report. The following GRI Index provides the pages and sections wherein various GRI data is reported.

GRI Criterion #	Description	Section		
	Strategy & Analysis			
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.	CEO Letter, p.3		
1.2	Description of key impacts, risks, and opportunities.	CEO Letter, p.3; Preface, p.5		
	Organizational Profile			
2.1	Name of the organization.	About Jacobs, p.6		
2.2	Primary brands, products, and/or services.	About Jacobs, p.6		
2.4	Location of organization's headquarters.	About Jacobs, p.6		
2.5	Number of countries where the organization operates.	About Jacobs, p.6		
2.6	Nature of ownership and legal form.	About Jacobs, p.6		
2.7	Markets served (including geographic breakdowns, sectors served, and types of customers/beneficiaries.)	About Jacobs, p.6		
2.8	Scale of the reporting organization.	About Jacobs, p.6		
2.9	Significant changes during the reporting period regarding size, structure, or ownership.	Appendix, p.128		
2.10	Awards received in the reporting period.	About Jacobs, p.7; Appendix, p.129		
	Report Parameters			
3.1	Reporting period (e.g., fiscal/calendar year) for information provided.	Appendix, p.127		
3.2	Date of most recent previous report (if any).	Appendix, p.127		
3.3	Reporting cycle (annual, biennial, etc.)	Appendix, p.127		
3.4	Contact point for questions regarding the report or its concerns.	Appendix, p.127		
3.5	Process for defining report content.	Appendix, p.127		
3.6	Boundary of the report.	Appendix, p.127		
3.7	State any specific limitations on the scope or boundary of the report.	Appendix, p.127		
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, p.127		
3.9	Data measurement techniques and the basis of calculations.	Appendix, p.127		
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 First time using GRI reporting		

GRI Criterion #	Description	Section
	Report Parameters (continued)	
3.11	Significant change from previous reporting periods in the scope, boundary, or measurement methods applied in the report.	Not Applicable First time using GRI reporting
3.12	Table identifying the location of the Standard Disclosures in the report.	GRI Index, p.118-123
3.13	Policy and current practice with regard to seeking external assurance for the report.	Appendix, p.127
	Governance, Commitments, and Engagement Governance	
4.1	Governance structure of the organization, including committees under the highest governance body responsible for specific tasks.	Our Philosophy, p.19; www.jacobs.com
4.2	Indicate whether the Chair of the highest governance body is also an executive officer.	Our Philosophy, p.19; www.jacobs.com
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.	Our Philosophy, p.19; www.jacobs.com
4.4	Mechanisms for shareholders and employees to provide recommendations or direction to the highest governance body.	Our Philosophy, p.19; www.jacobs.com
4.5	Linkage between compensation for members of the highest governance body, senior managers, executives, and the organization's performance.	Our Philosophy, p.19; www.jacobs.com
4.6	Processes in place for the highest governance body to ensure conflicts of interest are avoided.	Our Philosophy, p.19; www.jacobs.com
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.	Our Philosophy, p.19; www.jacobs.com
4.8	Internally developed statements of mission or values, codes of conduct, and principles relevant to economic, environmental, and social performance.	Our Philosophy, p.14 - 16
4.9	Procedures fo the highest governance body for overseeing the organization's identification and management of economic, environmental, and social performance.	Our Philosophy, p.14 - 16 www.jacobs.com
4.10	Processes for evaluating the highest governance body's own performance.	Our Philosophy, p.14 - 16 www.jacobs.com
4.11	Explanation of whether and how the precautionary approach or principle is addressed by the organization.	Appendix, p.127
4.12	Externally developed economic, environmental, and social charters, principles, or other initiatives to which the organization subscribes or endorses.	Appendix, p.130
4.13	Memberships in association and/or national/international advocacy organizations.	Appendix, p.130
4.14	List of stakeholder groups engaged by the organization.	Appendix, p.130
4.15	Basis for identification and selection of stakeholders with whom to engage.	Appendix, p.130
4.16	Approaches to stakeholder engagement, including frequency of engagement.	Our Philosophy, p.17 - 18

GRI Criterion #	Description	Section		
	Governance, Commitments, and Engagement Governance (continued)			
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.	Our Philosophy, p.16 - 18		
	Economic			
	Economic Performance			
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, p.131		
EC3	Coverage of the organization's defined benefit plan obligations. (Core)	Our Sustainable Workplace, p.96		
EC4	Significant financial assistance received from government. (Core)	\$0		
!	Market Presence	1		
EC7	Procedures for local hiring and proportion of senior management hired from the local community at significant locations of operation. (Core)	Appendix, p.131		
	Indirect Economic Impacts	1		
EC8	Development and impact of infrastructure investments and services provided primarily for public benefit through commercial, in-kind, or pro bono engagement. (Core)	Appendix, p.132		
	Environmental			
	Materials			
EN1	Materials used by weight or volume. (Core)	Partial Report - Our Sustainable Workplace, p.99		
EN2	Percentage of materials used that are recycled input materials. (Core)	Partial Report - Our Sustainable Workplace, p.99		
	Energy			
EN5	Energy saved due to conservation and efficiency improvements. (Additional)	Our Sustainable Workplace, p.99		
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)	Processes and Services for our Clients, p.26 - 37; Our Sustainable Workplace, p.99		
EN7	Initiatives to reduce indirect energy consumption and reductions achieved. (Additional)	Processes and Services for our Clients, p.26 - 37; Our Sustainable Workplace, p.99		
	Biodiversity			
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		

GRI Criterion #	Description	Section		
	Environmental (continued)			
	Emissions, Effluents, and Waste			
EN18	Initiatives to reduce greenhouse gas emissions and reductions achieved. (Additional)	Processes and Services for our Clients, p.26 - 37; Our Sustainable Workplace, p.99		
EN23	Total number and volume of significant spills. (Core)	None		
	Products and Services			
EN26	Initiatives to mitigate environmental impacts of products and services, and extent of impact mitigation. (Core)	Processes and Services for our Clients, p.26 - 39		
	Compliance			
EN28	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with environmental laws and regulations. (Core)	\$0		
	Social Performance: Labor Practices & Decent Work			
	Employment			
LA1	Total workforce by employment type, employment contract, and region. (Core)	About Jacobs, p.6; Appendix, p.133		
LA2	Total number and rate of employee turnover by age group, gender, and region. (Core)	Appendix, p.133		
LA3	Benefits provided to full-time employees that are not provided to temporary or part-time employees, by major operations. (Additional)	Our Sustainable Workplace, p.96		
LA4	Percentage of employees covered by collective bargaining agreements (Core)	Appendix, p.133		
	Occupational Health and Safety			
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)	Our Sustainable Workplace, p.94		
LA7	Rates of injury, occupational diseases, lost days, and absenteeism, and number of work-related fatalities by region. (Core)	We had more than 1.8 million work hours per Indemnity for CY2009.		
LA8	Education, training, counseling, prevention, and risk-control programs in place to assist workforce members, their families, or community members regarding serious diseases. (Core)	Our Sustainable Workplace, p.96		
	Training and Education			
LA10	Average hours of training per year per employee by employee category. (Core)	Our Sustainable Workplace, p.97		
LA11	Programs for skills management and lifelong learning that support the continued employability of employees and assist them in managing career endings. (Additional)	Our Sustainable Workplace, p.96		
LA12	Percentage of employees receiving regular performance and career development reviews. (Additional)	Our Sustainable Workplace, p.96		

# 7 GRI INDEX

GRI Criterion #	Description	Section			
I Social Performance: Labor Practices & Decent Work (continued)					
	Diversity and Equal Opportunity				
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, p.133			
· · · · · · · · · · · · · · · · · · ·	Social Performance: Human Rights				
	Investment and Procurement Practices				
HR1	Percentage and total number of significant investment agreements that include human rights clauses or that have undergone human rights screening. (Core)	Processes and Services for our Clients, p.38			
HR2	Percentage of significant suppliers and contractors that have undergone screening on human rights and actions taken. (Core)	Processes and Services for our Clients, p.38			
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)	Processes and Services for our Clients, p.38			
Non-Discrimination					
HR4	Total number of incidents of discrimination and actions taken. (Core)	None			
Child Labor					
HR6	Operations identified as having significant risk for incidents of child labor, and measures taken to contribute to the elimination of child labor. (Core)	Processes and Services for our Clients, p.38			
	Forced and Compulsory Labor				
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)	Processes and Services for our Clients, p.38			
Indigenous Rights					
HR9	Total number of incidents of violations involving rights of indigenous people and actions taken. (Additional)	None			
ĺ	Social Performance: Society				
	Corruption				
SO2	Percentage and total number of business units analyzed for risks related to corruption. (Core)	Our Philosophy, p.20 - 21			
SO3	Percentage of employees trained in organization's anti-corruption policies and procedures. (Core)	Our Philosophy, p.21			
SO4	Actions taken in response to incidents of corruption. (Core)	Our Philosophy, p.20			
	Public Policy				
SO5	Public policy positions and participation in public policy development and lobbying. (Core)	Appendix, p.127			

# 7 GRI INDEX

GRI Criterion #	Description	Section			
	Social Performance: Society (continued)				
	Anti-Competitive Behavior				
SO7	Total number of legal actions for anti-competitive behavior, anti-trust, and monopoly practices and their outcomes. (Additional)	None			
	Compliance				
SO8	Monetary value of significant fines and total number of non-monetary sanctions for non-compliance with laws and regulations. (Core)	\$0			
	Social Performance: Product Responsibility				
	Products and Service Labeling				
PR5	Practices related to customer satisfaction, including results of surveys measuring customer satisfaction. (Additional)	Our Philosophy, p.17			
	Marketing Communications				
PR6	Programs for adherence to laws, standards, and voluntary codes related to marketing communications, including advertising, promotion, and sponsorship. (Core)	Appendix, p.134			
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			
	Customer Privacy				
PR8	Total number of substantiated complaints regarding breaches of customer privacy and losses of customer data. (Additional)	None			
	Compliance				
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.

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

We See Sustainability Differently

## **A. Report Parameters**

#### Reporting Period/Most Recent Report/Report Cycle and 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 2009. The report is inclusive of data from Jacobs and all related entities, with no limitations. See our investor relations section at www.jacobs.com for more information. This report has not been audited by a third party (e.g., GRI, etc.). Prior to our 2010 report, our most recent report was published in 2009. 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.

#### **Data Measurement Techniques and 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.

### **B. Business Conduct and Ethics**

#### Corporate Policy Concerning Business Conduct, Integrity, and Ethics

Jacobs Engineering Group Inc. 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 website: www.jacobs.com.

## **C.** Public Filings

#### **SEC Regulations**

Jacobs is a publicly traded company on the New York Stock Exchange and we are regulated by the U.S. Securities and Exchange Commission (SEC). For additional information about Jacobs, please see our 2009 10-K and other filings available on the investor section of our public website: www.jacobs.com.

## **D.** Organizational Profile

#### Significant Changes in Size, Structure, and Ownership

Jacobs did not have any significant changes in size or structure during the 2009 reporting period. The firm acquired two smaller firms in 2009: Triton Construction, Inc., a 50-person construction services firm headquartered in Edmonton, Canada, and TYBRIN Corporation, a 1,500-person professional services firm headquartered in Fort Walton Beach, Fla.

Because we acquired a third company so early in 2010, it is also being noted as an acquisition in this report. JJG (Jordan Jones and Goulding, Inc.), is a 500-person professional services firm based in Atlanta, Georgia, and acquired by Jacobs in February 2010.

Peter Robertson joined our Board of Directors in 2009. Peter, a former Vice Chairman of Chevron Corp., brings a wealth of knowledge and experience to our firm and we are fortunate to have his insights on our Board.

# Internal Award Recognitions for HSE and Project Safety Milestones

#### Jacobs National Safety Council 2009 Occupational Award Winners

The 38 projects, sites, and offices listed below were recognized as outstanding performers during 2009 in one of six National Safety Council categories ranging from a "Perfect Record" of 12 consecutive months without any occupational injuries or illnesses to "Certificate of Merit" demonstrating outstanding safety practices. This group of superior performers demonstrates exceptional commitment and leadership toward safety and the safekeeping of our employees.

Jacobs, BP Texas City, Texas City, Texas

Jacobs, CP Chem Distribution Control System Project, Baytown, Texas

Jacobs, CP Chem Distribution Control System Project, Baytown, Texas

Jacobs, Exxon Mobil Torrance Refinery, Torrance, Calif.

Jacobs Engineering, Alaska, Pasadena, Calif.

Jacobs Engineering India Private Limited, Jacobs Offices, Singapore

Jacobs Engineering India Private Limited, Jacobs Offices

Jacobs Engineering Singapore Private Limited, Jacobs Offices, Singapore

Jacobs Engineering Singapore Pte. Ltd, Home Office Operations, Singapore

Jacobs Field Services, ADM Clinton, Clinton, Iowa

Jacobs Field Services, Exxon Mobil PE Plant, Beaumont, Texas

Jacobs Field Services, Merichem Facility, Houston, Texas

Jacobs Field Services North America, Exxon Mobil Baytown Site, Baytown, Texas

Jacobs Field Services North America, Lyondell Basell Plant, Pasadena, Texas Jacobs Field Services North America, ADM Corn Processors Plant, Cedar Rapids, Iowa

Jacobs Field Services North America, ADM Peoria, Peoria, Ill.

Jacobs Field Services North America, Akzo Nobel Surface Chemistry, Morris, III.

Jacobs Field Services North America, Archer Daniels Midland, Columbus, Neb.

Jacobs Field Services North America, Bayer Material Science, Baytown, Texas

Jacobs Field Services North America, Exxon Mobile Plastics Plant, Mont Belvieu, Texas

Jacobs Field Services North America, Flint Hills Resources, Odessa, Texas

Jacobs Field Services North America, Huntsman Chemicals, Dayton, Texas

Jacobs Field Services North America, Decatur, III.

Jacobs Field Services North America Inc, Chevron San Ardo Lease, San Ardo, Calif.

Jacobs Field Services North America, Inc, BP Carson Refinery, Carson, Calif.

Jacobs Field Services, North America, Akzo Nobel, Deer Park, Texas Jacobs Field Services, North America, Huntsman Chemical Plant, Conroe, Texas

Jacobs Field Services, North America, Lanxess, Orange, Texas

Jacobs Industrial Services, ATA, Arnold AFB, Texas

Jacobs Industrial Services Inc, Conoco Phillips, Billings, Mont.

Jacobs Industrial Services Inc, Kraton Polymers US LLC, Belpre, Ohio

Jacobs Industrial Services Inc, Lima Chemicals, Lima, Ohio

Jacobs Industrial Services Inc, Meadwestvaco, Wickliffe, Ky.

Jacobs Industrial Services Inc, Sun Coke, Franklin Furnace, Ohio

Jacobs Industrial Services Inc., Sunoco Chemicals, Haverhill, Ohio

Jacobs North America Field Services, Kimberly Clark, Paris, Texas

Jacobs Shell Facilities Siting Program, Martinez, Calif.

Jacobs Shell Facility Siting Program, Shell Deer Park Facility, Deer Park, Texas

# E. Governance, Commitments & Engagements

#### Membership in Associations and Advocacy Organizations

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

Association of the Advancement of Cost Engineering International (AACEI)

International Association of Foundation Drilling (ADSC)

Airport Consultants Council (ACC)

Airport Ground Transportation Association (AGTA)

Airports Council International, North America (ACI)

American Association of Airport Executives (AAAE)

American Chemical Society (ACS)

American Concrete Institute (ACI)

American Council of Engineering Companies (ACEC)

American Institute of Architects (AIA)

American Institute of Steel Construction (AISC)

American Planning Association (APA)

American Public Works Association (APWA)

American Road and Transportation Builders Assoc (ARTBA)

American Segmental Bridge Institute (ASBI)

American Society for Healthcare Engineering (ASHE)

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)

American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)

Asian American Architects and Engineers Association (AAa/e)

American Society of Plumbing Engineers (ASPE)

Associated Builders and Contractors, Inc. (ABC)

Associated Maintenance Contractors (AMC)

Advancing Women in Transportation (WTS)

Council of Educational Facility Planners International (CEFPI)

Construction Management Association of America (CMAA)

Construction Industry Advisory Council (CIAC)

Construction Industry Round Table (CIRT)

Construction Users Round Table (CURT)

Corporate Executive Board (CEB)

Federal Bar Association (FBA)

International Interior Design Association (IIDA)

Institute of Transportation Engineers (ITE)

International Council of Shopping Centers (ICSC)

International District Energy Association (IDEA)

National Groundwater Association (NGWA)

National Society of Professional Engineers (NSPE)

National Council for Public Private Partnerships (NCPPP)

Pressed Concrete Institute (PCI)

Procurement Executives Group

Real Estate Council

Safety Council

Shaikh, Mohammad Tughral

Society of 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.

## F. 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.

#### Market Presence

## Procedures for Local Hiring and 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 a 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.

In order to best demonstrate our practice of hiring senior management from the local community, given the data we currently collect, we identified which employees were working in the country in which they claim residence. Employees who were working in the same country of their residency were considered local candidates. Employees working as foreign nationals in a host country on a temporary assignment were considered non-local candidates. The report included the senior management hires made for our fiscal year 2009 and 2010 (up through February 28, 2010). From this report, it was determined that 97 percent of our hires for senior management positions for the period were local candidates and 3 percent are considered non-local.

#### **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, designbuild, construction, and program management services. Approximately 9 percent of Jacobs' 2009 revenues came from our infrastructure business.

## G. Social Performance: Labor Practices & Decent Work

Continent	Staff Including contract/agency	Craft/Skilled Including contract/agency
N. America	26,157	12,991
Europe	9,500	750
Africa	16	0
Asia (includes Middle East)	3315	0
Australia	210	0
S. America	0	0
Antarctica	0	0
Totals	39,198	13,741

#### Total Workforce by Employment Type, Contract & Region

#### Total Number & Rate of Employee Turnover by Age Group, Gender, and Region

Voluntary Turnover Rate for the 2009 Fiscal Year was about six percent globally. Composition of governance bodies and breakdown of employees per category according to gender, age group, minority group membership, and other indicators of diversity.

Gender & Age	% of Staff Employees
Gender	
Female	25%
Male	75%
Age Groups	
Under 30 years old	12%
30-50 years old	41%
Over 50 years old	47%

## Percentage of Employees Covered by Collective Bargaining Agreements

In Canada, the United States, and the United Kingdom, more than 7,700 employees are covered by a collective bargaining agreement. In several other countries where we have operations, employees are covered by their respective national labor agreements.

# H. Social Performance: Product Responsibility

## Programs for Adherence to Laws, Standards, and Voluntary Codes Related to Marketing Communications, Including Advertising, Promotion, and 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.



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