SUSTAINABILITY:

GREEN BUILDINGS & BEYOND

Deep Thoughts by Deepinder Singh: Part 6

A series on the future of cloud computing, big data and buildings

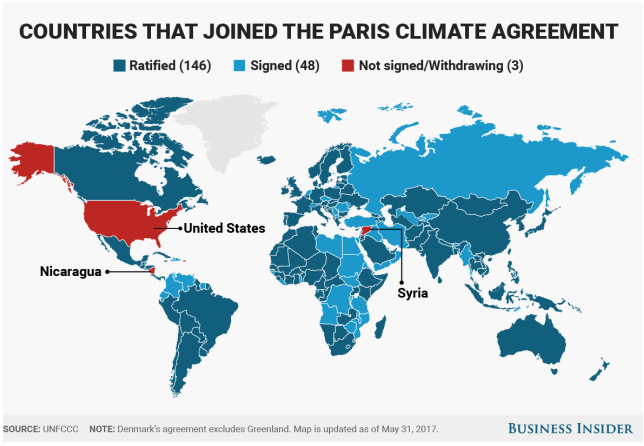
SUSTAINABILITY

Sustainability includes the ability to withstand change, accommodate inhabitants, maximize and preserve resources and minimize waste. At 75F, we see great potential in reducing energy use with more intelligent building systems, while also improving business processes and efficiency, tenant health and wellness, and overall resource management, for the mutual benefit of planet, profit and people.

for the PLANET

SUSTAINABLE ENERGY: WHERE WE ARE NOW

In December 2015, the Paris Climate Agreement was formed to combat planet earth's global warming, building on the 1992 United Nations Framework Convention on Climate Change (UNFCCC). The goal of the Paris Agreement is to prevent the global



Source: UNFCCC, Business Insider

temperature from rising above pre-industrial levels by substantially cutting greenhouse gas emissions. The agreement encourages participating countries to significantly reduce their energy usage – with developed countries making a commitment to mobilize $100 billion a year in climate finance by 2020.

In June 2017, United States President Donald Trump made the controversial announcement that the U.S. would withdraw from the Paris Agreement. The U.S. makes up only 4.5% of the global population, yet consumes nearly 20% of the world's energy.

BUILDING BUSINESS IMPACT

According to the U.S. Department of Energy, commercial buildings account for over 36% of the country's total energy consumption.

Despite the U.S. withdrawal from the Paris Agreement, business owners must take steps to mitigate energy usage. Thanks to tax incentives and recent advances in smart building technology for HVAC and lighting systems, the choice to be sustainable is more than a moral decision – it is a wise financial move, as well. Green buildings, whether built from the ground up or retrofitted, are now significantly less expensive than traditional models, and they bring many added benefits for both owners and occupants.

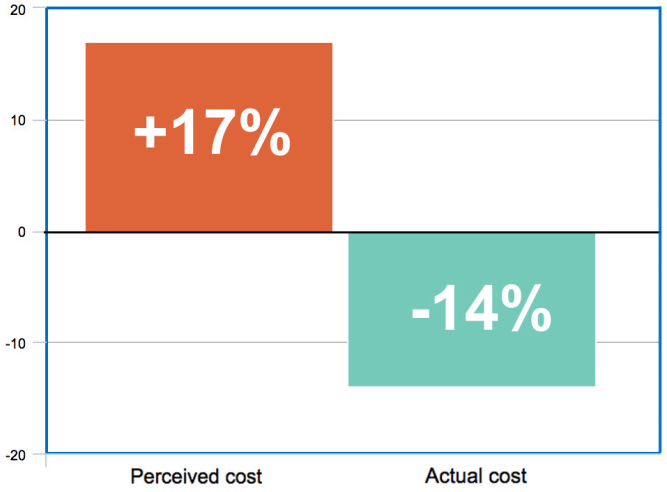
for PROFIT

THE BUSINESS CASE FOR GOING GREEN

Misconceptions about cost prevent adoption of sustainable buildings. A 2007 opinion survey by the World Business Council for Sustainable Development found that green buildings were thought to cost 17% more than traditional buildings. But according to the World Green Building Trends 2016 Smart Market Report, green buildings are 14% less costly to operate than traditional buildings – with newer buildings saving significantly more in terms of energy costs. Additionally, on average green buildings are worth 7% more than traditional buildings – with market demand for green buildings doubling every three years. As Georg Kell

and Bruno Berthon write in the UN Global Compact-Accenture CEO Study 2010, A New Era of Sustainability – "Good performance on sustainability amounts to good business overall: the imperative to act has shifted from a moral to a business case".

Perceived vs. Actual Cost of Green Buildings
(as compared to traditional buildings)



Based on data from the World Business Council for Sustainable Development and the World Green Building Trends 2016 Smart Market Report.

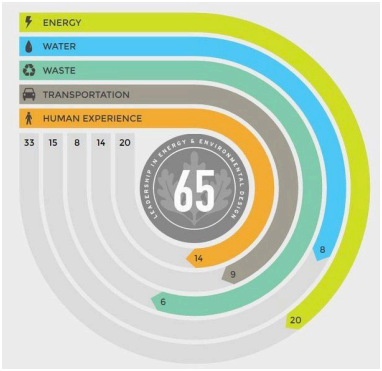
SMART BUILDING PARTNERSHIPS, CERTIFICATIONS & MEASURES

The United Nations Environment Program, or UNEP, is dedicated to combating climate change and developing sustainable practices. Because of these shared beliefs (at the origin of our brand), we at 75F are proud to be members of the UNEP Sustainable Buildings and Climate Initiative, which is co-led by the U.S. Green Building Council (USGBC).

The USGBC is a non-profit organization which promotes sustainability in building design, construction and operation. They are best known for their development of the Leadership in Energy and Environmental Design (LEED). As the USGBC writes, "LEED is the most widely used green building rating system in the world. Available for virtually all building, community and home project types, LEED provides a framework to create healthy, highly efficient and cost-saving green buildings. LEED certification is a globally recognized symbol of sustainability achievement." Buildings receive a ranking based on a variety of factors, including indoor air quality performance, thermal comfort and enhanced commissioning.

Programs to Watch:

Arc is a state-of-the-art platform designed to help collect, manage and benchmark your data to improve sustainability performance. With Arc, buildings can input their data to benchmark themselves and improve performance. Arc calculates a performance score out of 100, based on a global data set and action-oriented strategies across five categories: Energy, Water, Waste, Transportation and Human Experience. 75F is the first building automation solution to integrate Arc, enabling automatic score updates in 75F Facilisight software.



The International Well Building Institute has developed the **WELL Building Standard**, a flexible framework for improving health and human experience through design, advancing health and well-being in buildings globally. At 75F, we see increasing importance in healthy building

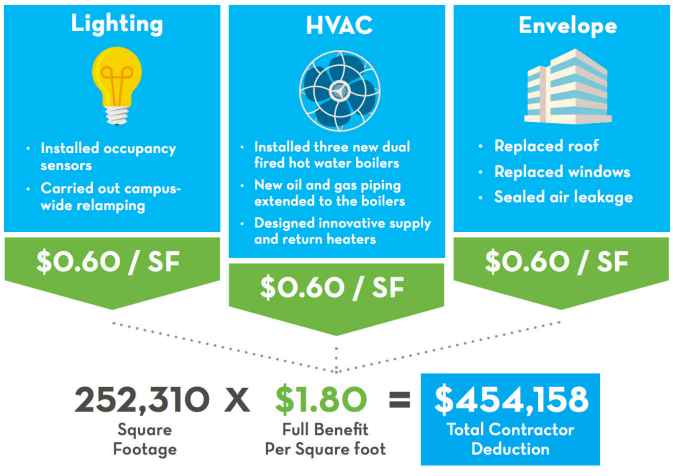
initiatives and are seeking to factor the WELL Building Standards into our solution development.

The International Living Future Insititute's **Living Building Challenge** seeks to develop regenerative buildings that connect occupants to light, air, food, nature, and community; self-sufficient and remain within the resource limits of their site; create a positive impact on the human and natural systems that interact with them.

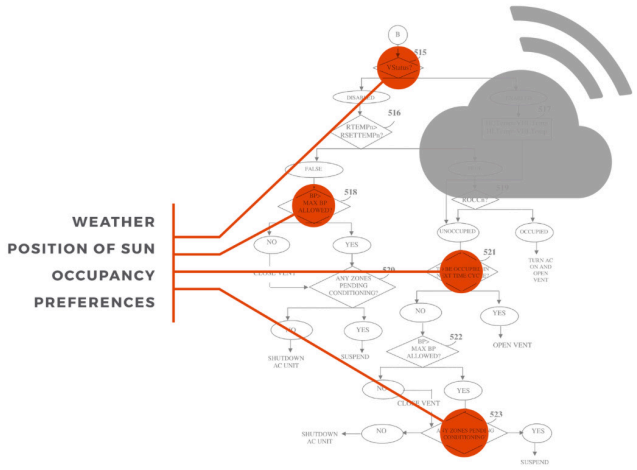
New Buildings Institute (NBI) is a nonprofit organization driving better energy performance in commercial buildings, promoting advanced design practices, innovative technologies, public policies and programs that improve energy efficiency, including the development of Zero Net Energy (ZNE) buildings: ultra-efficient new construction and deep energy retrofit projects that consume only as much energy as they produce from clean, renewable resources.

SMART BUILDING INCENTIVES

To curb energy use, Congress offers incentives such as the Energy-Efficient Commercial Building Deduction (179D), which in 2006 through 2017 allowed qualifying building owners and businesses to receive a tax deduction of up to $1.80 per square foot for energy-efficient buildings – including retail, office, industrial and warehouse buildings. Energy-efficient improvements include HVAC and lighting systems, which ultimately cut energy costs and improve a building's value. Low-interest financing packages further facilitate such efficiency enhancements.



An example of potential savings from 179D after energy enhancements.
Source: Alliantgroup



Smart HVAC systems can take into account everything from building orientation to local weather forecasts.

New incentive packages continue to develop. Recently, 75F became the first company to partner with the **Center for Energy and Environment (CEE)** to take advantage of their new One-Stop Efficiency Shop® for HVAC upgrades. CEE designed and delivered the program for Xcel Energy Minnesota. A national leader, the CEE offering has earned the designation of "Exemplary Energy Efficiency Program" from the American Council for an Energy-Efficient Economy.

TECHNOLOGY & EFFICIENCY

Efficiency isn't always top of mind when choosing a building, though smart building technologies offer great savings potential for commercial building owners and tenants alike. Common Area Maintenance (CAM)

and Tenant Improvement (TI) funds can also be applied toward this end, improving property value while reducing operating expenses.

A wide range of HVAC system improvements qualify for tax incentives; examples include geothermal systems, thermal energy storage and Variable Refrigerant Flow (VRF) zoning. Though, the most comprehensive, efficient and often inexpensive way to create a qualifying energy efficient building is to implement a "smart" HVAC system. Web-based, smart HVAC systems can automatically adjust controls based on sensors and data sources, such as occupancy levels and weather, for optimum results and

Addressing the triple bottom line increases profits and employee productivity while reducing overall energy usage.
Source: RPM Retail

minimal energy use. Automated systems are markedly more efficient than manually controlled buildings, even surpassing newer standard HVAC systems. A predictive, proactive HVAC system can save a building 30% to 70% more energy (Btu) during the winter months from November to March, according to a 2016 study conducted by the Gas Technology Institute (GTI), a nationally recognized third-party verification lab.

Similar to HVAC upgrades, lighting systems improvements offer significant energy efficiency impact. The quickest and most common approach is relamping, replacing traditional lightbulbs with LEDs. Much like upgrades to HVAC systems, "smart" solutions can take lighting improvements further than wattage reduction by adding features such as timers, occupancy detectors and scheduling. When employed on a building-wide scale, these changes can amount to significant reductions in energy use.

A SHORTER ROI

Green buildings often experience very short ROIs which make smart HVAC and lighting systems appealing. In 2011, the UCLA Institute of Environment and Sustainability and CBRE produced a study on the trends and challenges of increasing building energy efficiency in retrofitting commercial real estate. Retrofit report analysis and surveys conducted by the researchers suggested decision makers expect a three- to five-year payback on any energy efficiency retrofit. Incentives and rebates can help shorten the payback period and start net savings returns.

for PEOPLE

A BETTER QUALITY OF WORK & LIFE

Beyond a short ROI, plus ongoing energy savings, smart building infrastructure can also improve quality of life for both owners and tenants by enhanced monitoring, measurement and control capabilities of equipment and indoor environments. With building automation, facility managers can analyze and improve efficiency, pre-empt costly failure or service with pre-emptive monitoring, and maximize investment of time and money across equipment and staff, freeing up people's time to focus on higher-value priorities.

Perhaps the greatest value realized (and least measured) is that for people, in providing a welcoming, comfortable, healthy environment with temperatures, air quality and lighting to maximize occupant productivity and well-being.

The true value of healthy buildings are just beginning to come to light with the advancing Well Building standard and other human factor assessments. Consider that the cost of staffing represents about 100x that of energy costs, on an annual, per-square-foot basis. If the energy savings alone can justify smart building improvements in a matter of just 2-3 years, consider the exponential and immediate gains in providing a great place to work for happy, productive and healthy inhabitants in your building… and on this planet.

CONCLUSION

While sustainable buildings were once considered luxuries, they now represent a smart financial and widely beneficial choice essential for any building owner. The quick payback (further accelerated by incentives) and the ongoing energy savings potential from smart HVAC and lighting systems are significant; yet, when combined the quality of intelligent building and business management, and healthy, productive occupants, smart sustainable buildings are a clear choice.

Making the choice to be sustainable is now easier than ever. Despite U.S. withdrawal from the Paris Agreement, U.S. business owners can still make significant reductions to their energy usage – creating a more sustainable world. The best part? The organizations who implement smart systems will save a great deal of money in the process and prove to be leading corporate citizens.

ABOUT THE AUTHOR

Deepinder Singh founded *75F* in 2012 after he designed some of the world's fastest core networks for Tier 1 service providers like *AT&T, NTT* and *Verizon.* With almost 25 years experience in electronics and computing, he's brought a wealth of embedded products to the market. His key goal in every endeavor is to simplify operational complexity and make products intuitive.

That's why he created 75F, an intelligent building solution that utilizes the Internet of Things and the latest in cloud computing to create systems that predict, monitor and manage the needs of commercial buildings.