

Designing to Thrive

Introduction to the Big Picture of Sustainability

Presented By
Paul Shahriari



Topics to discuss today

- How Big is the Big Picture of Sustainability?
- How small decisions make a big impact
- How we make sustainable decisions
- How do we increase sustainable decision making?
- Overview of our topics today
- Things to think about during the day

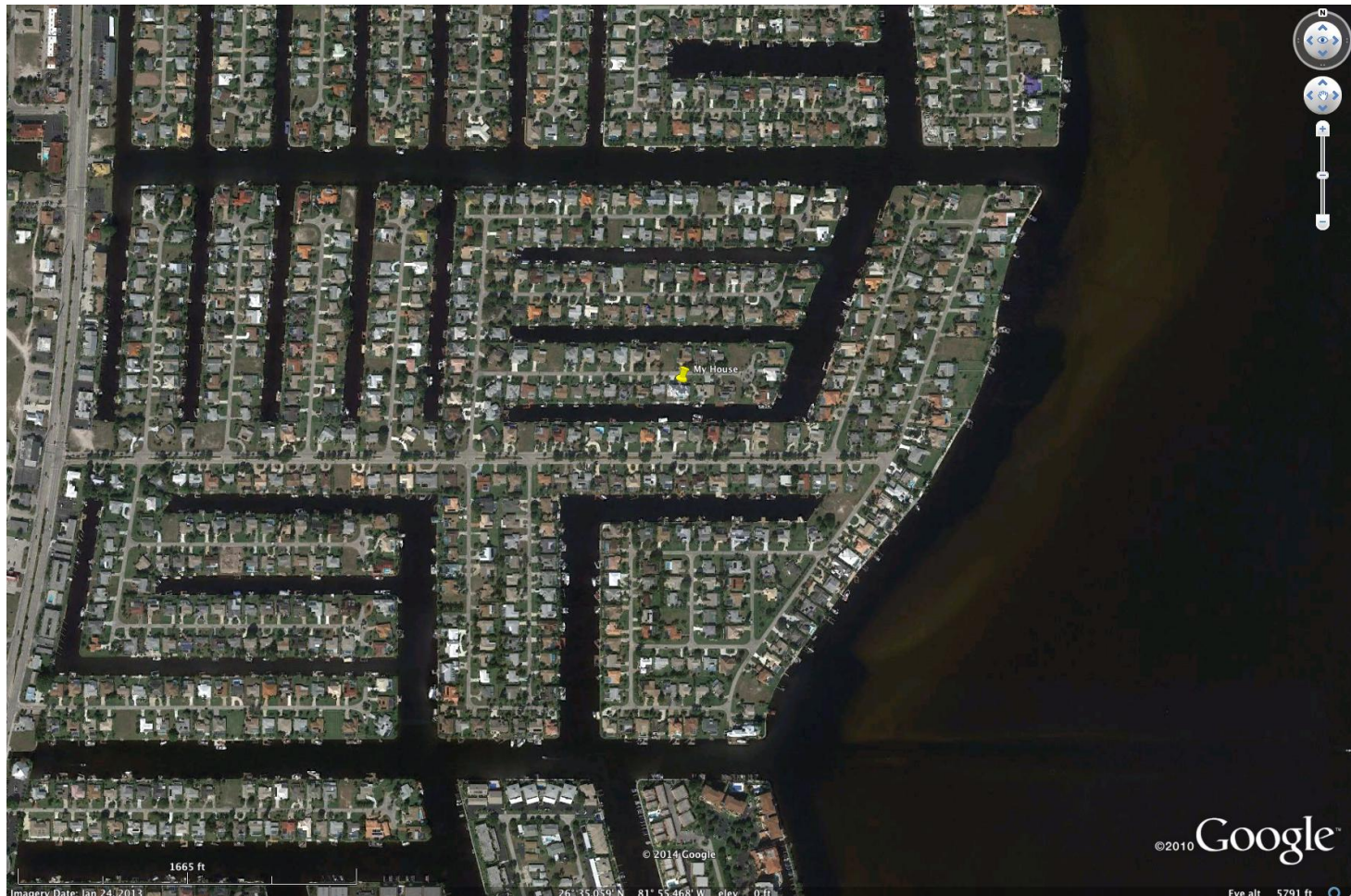
How Big is the Big picture of Sustainability?

Scale of the Picture is critical - My House



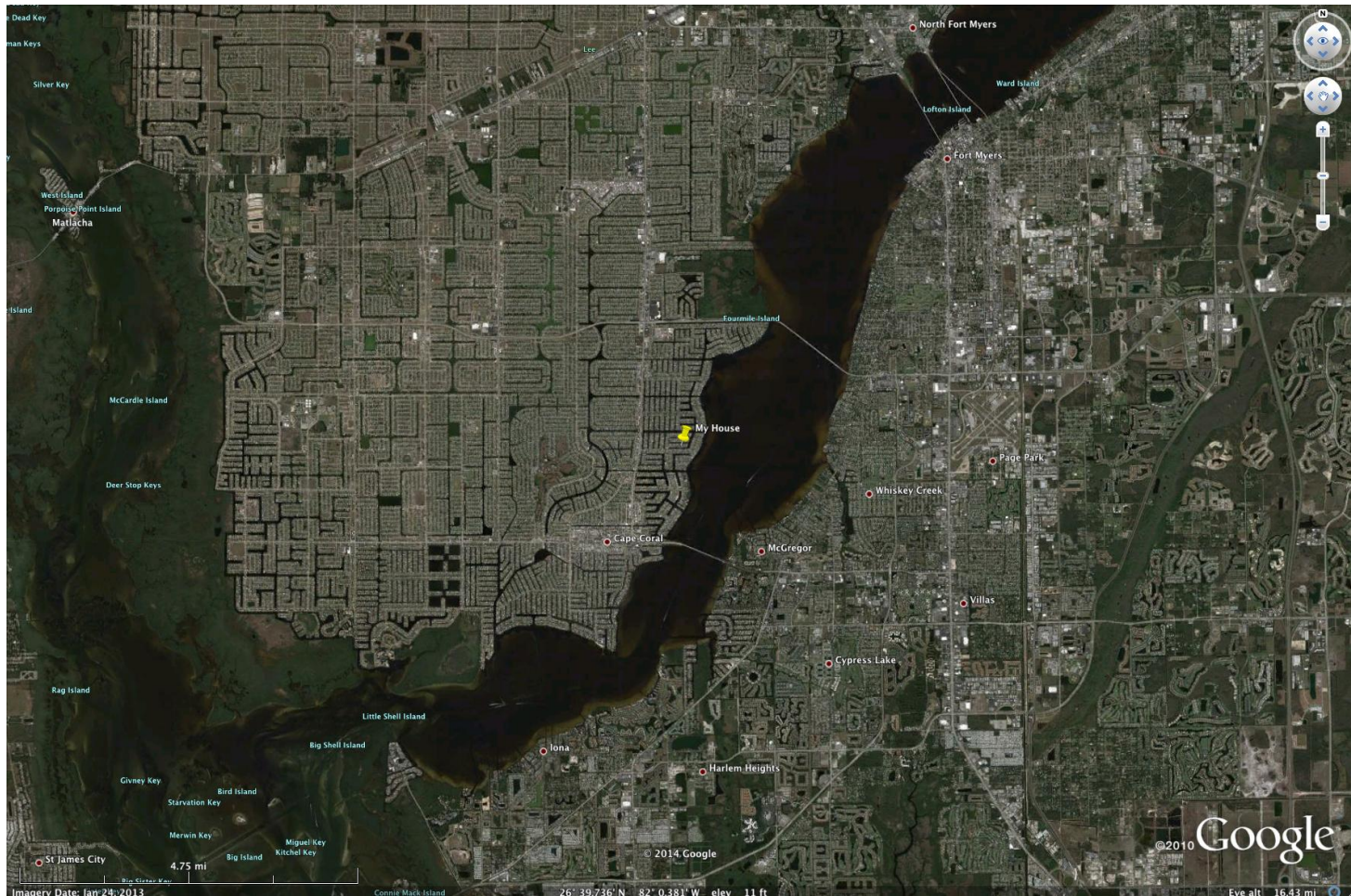
How Big is the Big picture of Sustainability?

Scale of the Picture is critical – Our Neighborhood



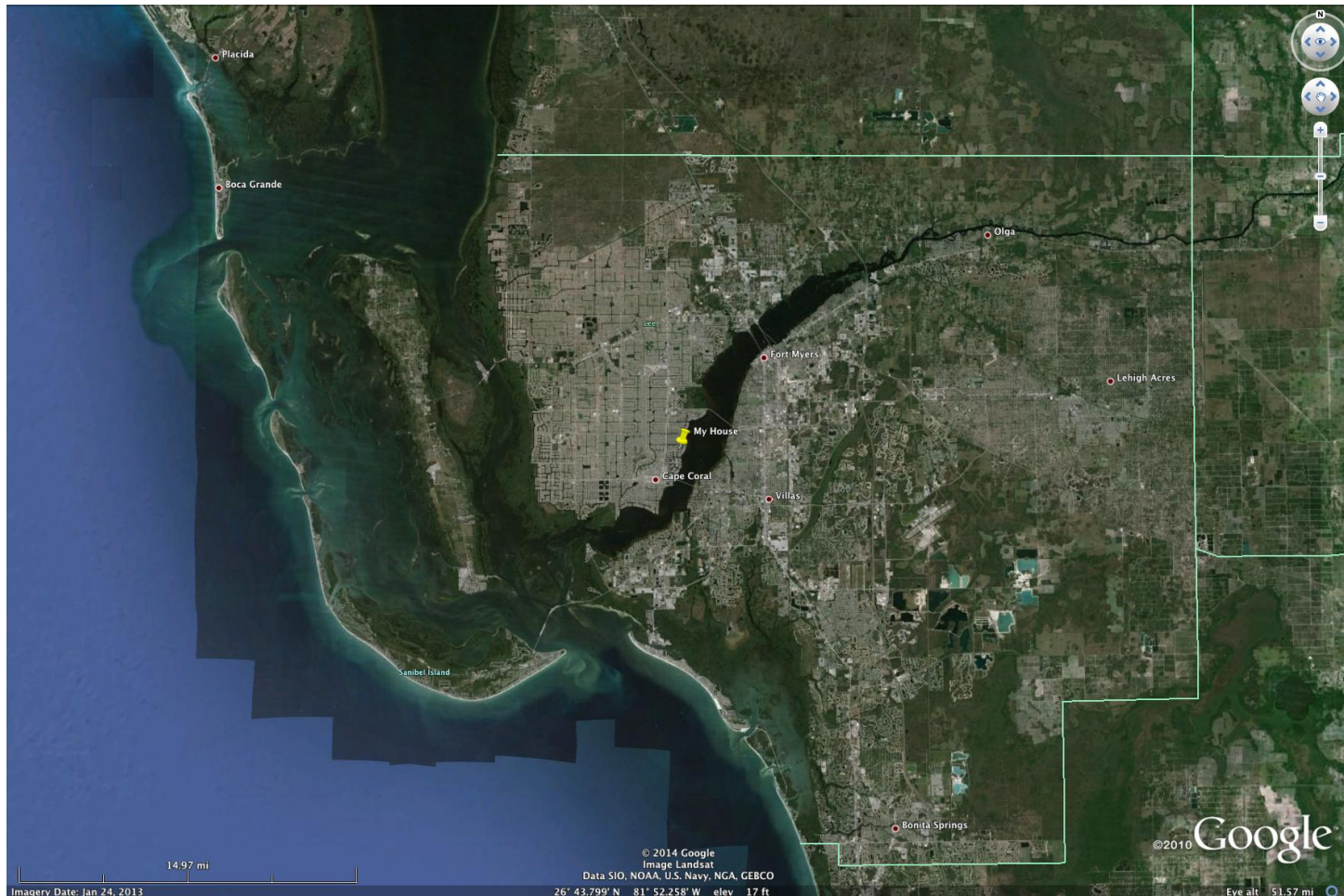
How Big is the Big picture of Sustainability?

Scale of the Picture is critical – Our City



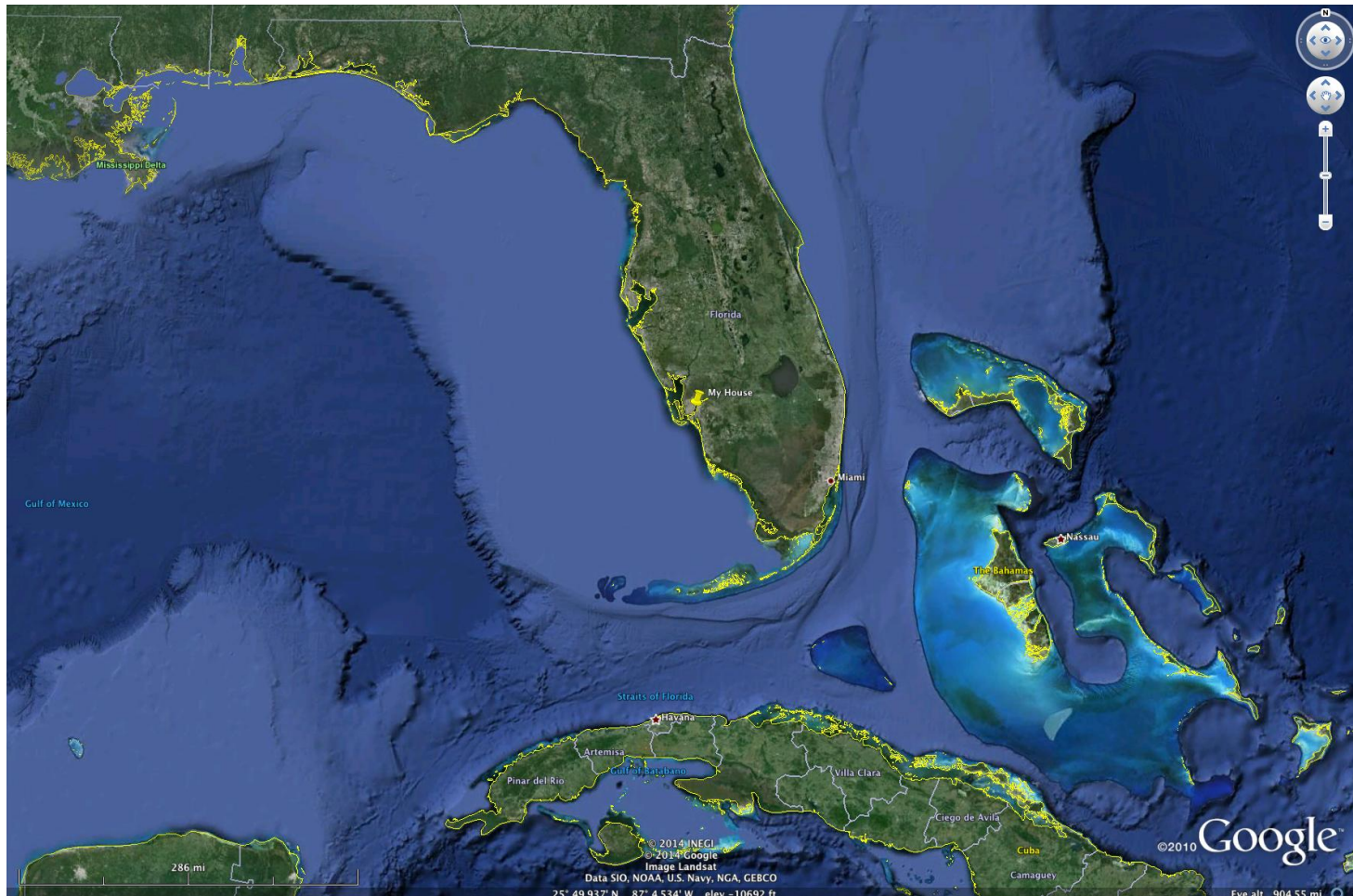
How Big is the Big picture of Sustainability?

Scale of the Picture is critical – Our County



How Big is the Big picture of Sustainability?

Scale of the Picture is critical – Our State



How Big is the Big picture of Sustainability?

Scale of the Picture is critical – Our Country



How Big is the Big picture of Sustainability?

Scale of the Picture is critical – Our Planet



How Big is the Big picture of Sustainability?

Scope of our interest is also critical



How Small decisions make a big impact

Lessons learned from a project in Dubai

SEE WHAT WE ARE BUILDING



- Palm Jumeirah
- Palm Jebel Ali
- Palm Deira
- The World
- Waterfront
- Jumeirah Islands
- Jumeirah Village
- Jumeirah Park
- Jumeirah Heights

- Ibn Battuta Mall
- Discovery Gardens
- International City
- The Gardens
- AL Furjan
- Dragon Mart
- Dubai Promenade
- Mina Rashid
- The Universe

How Small decisions make a big impact

Lessons learned from a project in Dubai



How Small decisions make a big impact

Lessons learned from a project in Dubai



Window Design Sustainability Worksheet

Created By: Paul Shahriari

Assumptions for Villas:

Estimated Energy Consumption kWh / SF
Estimated Electrical Cost per \$/kWh

5.75
0.025

User Input
System Calc

Monthly Impact Analysis based on 14 villas of each type being built







								
	Central Pool Spanish	Grand Courtyard Mediterranean	Grand Lobby Mediterranean	Great Rotunda European	Grand Staircase Mediterranean	Gallery View European	Gallery View Mediterranean	Central Garden Villa
Gross Building Area for a single villa (sf)	9,337	8,627	8,761	8,404	8,759	9,669	9,326	8,524
Gross Building Area for 14 villas of this type (sf)	130,718	120,778	122,654	117,656	122,626	135,366	130,564	119,336
Estimated Monthly Energy Consumption (kWh)	751,629	694,474	705,261	676,522	705,100	778,355	750,743	686,182
Estimated Monthly Electrical Cost (\$)	\$18,791	\$17,362	\$17,632	\$16,913	\$17,627	\$19,459	\$18,769	\$17,155
Estimated Energy Conservation ¹ (kWh/Month)	-150,326	-138,895	-141,052	-135,304	-141,020	-155,671	-150,149	-137,236
Estimated Energy Cost Conservation (\$/Month)	-\$3,758	-\$3,472	-\$3,526	-\$3,383	-\$3,525	-\$3,892	-\$3,754	-\$3,431
Estimated Green House Gases Reduction ² (kg CO ₂ /Month)	-37,581	-34,724	-35,263	-33,826	-35,255	-38,918	-37,537	-34,309

Note¹: Energy Savings estimated at 20% overall reduction as a result of Pella Windows

Note²: It is estimated that 250g of CO₂ is generated by the production of 1kWh of electricity in Dubai

How Small decisions make a big impact

Lessons learned from a project in Dubai

Nakheel Development Review						
<i>Monthly Impact Analysis for developments listed below</i>						
						
	Jumeirah Point Villas	Palm Deira	Palm Jebel Ali	Dubai Waterfront	The Universe	The World
# of Units	112	3500	3000	3000	2000	750
Gross Building Area for a single villa (sf)	Actual area used	8,500	8,500	8,500	8,500	8,500
Gross Building Area for 14 villas of this type (sf)	999,698	29,750,000	25,500,000	25,500,000	17,000,000	6,375,000
Estimated Monthly Energy Consumption (kWh)	5,748,264	171,062,500	146,625,000	146,625,000	97,750,000	36,656,250
Estimated Monthly Electrical Cost (\$)	\$143,707	\$4,276,563	\$3,665,625	\$3,665,625	\$2,443,750	\$916,406
Estimated Energy Conservation¹ (kWh/Month)	120,893,403					
Estimated Energy Cost Conservation (\$/Month)	\$3,022,335					
Estimated Green House Gases Reduction² (kg CO²/Month)	30,223,351					

How Small decisions make a big impact

Just Better windows



Lifetime Savings Estimate (Based on 25yrs)

Energy Conservation (kWh)	36,268,020,810
Energy Cost (\$)	\$2,465,422,496
Green House Gases Reduction (kg)	9,067,005,203
Value of Carbon offsets (\$)	\$181,340,104

How Small decisions make a big impact

High Performance Products throughout homes



Lifetime Savings Estimate (Based on 25yrs)

Energy Conservation (kWh)	90,670,052,025
Energy Cost (\$)	\$6,163,556,239
Green House Gases Reduction (kg)	22,667,513,006
Value of Carbon offsets (\$)	\$453,350,260

How Small decisions make a big impact
Learning lessons from my house

Florida High Performance Green House

A practical showcase for green design, construction, technology and materials



www.flgreenhouse.com

How Small decisions make a big impact

Learning lessons from my house

High Performance Home Operating Costs Savings Tool			
Model Inputs			
Energy Cost	0.11	\$/Kwh	
Yearly Energy Cost Escalation	7.5%	%	
Water Cost	0.005	\$/gal	
Yearly Water Cost Escalation Estimate	12.5%	%	

	Energy Saving Features											Water Saving Features				
	Greenblock ICF Structural walls	Englert Metal Roofing	JELD-WEN Windows	DOW Spray Foam insulation solutions	Ultra-Aire Central Dehu	High Efficiency Heating and Cooling System	Sure Temp Solar Hot Water Heater	Bosch Energy Star Appliances	Fafco Tubular Skylights	Lunera LED Lighting Technology	Progress Flourescent Lighting	Kohler Water Sense Fixtures	Cement Industries Rainwater Cistern System	SaltScape Solutions	Native Plant Landscape	Total
Energy Savings in kWh	400	175	250	250	150	250	175	200	175	175	200					2400
Water Savings in Gallons												3000	2500	1000	1500	8000
Monthly Cost Savings	\$ 44	\$ 19	\$ 28	\$ 28	\$ 17	\$ 28	\$ 19	\$ 22	\$ 19	\$ 19	\$ 22	\$ 15	\$ 13	\$ 5	\$ 8	\$ 304

Green Ingredients provide economic value that brown choices don't

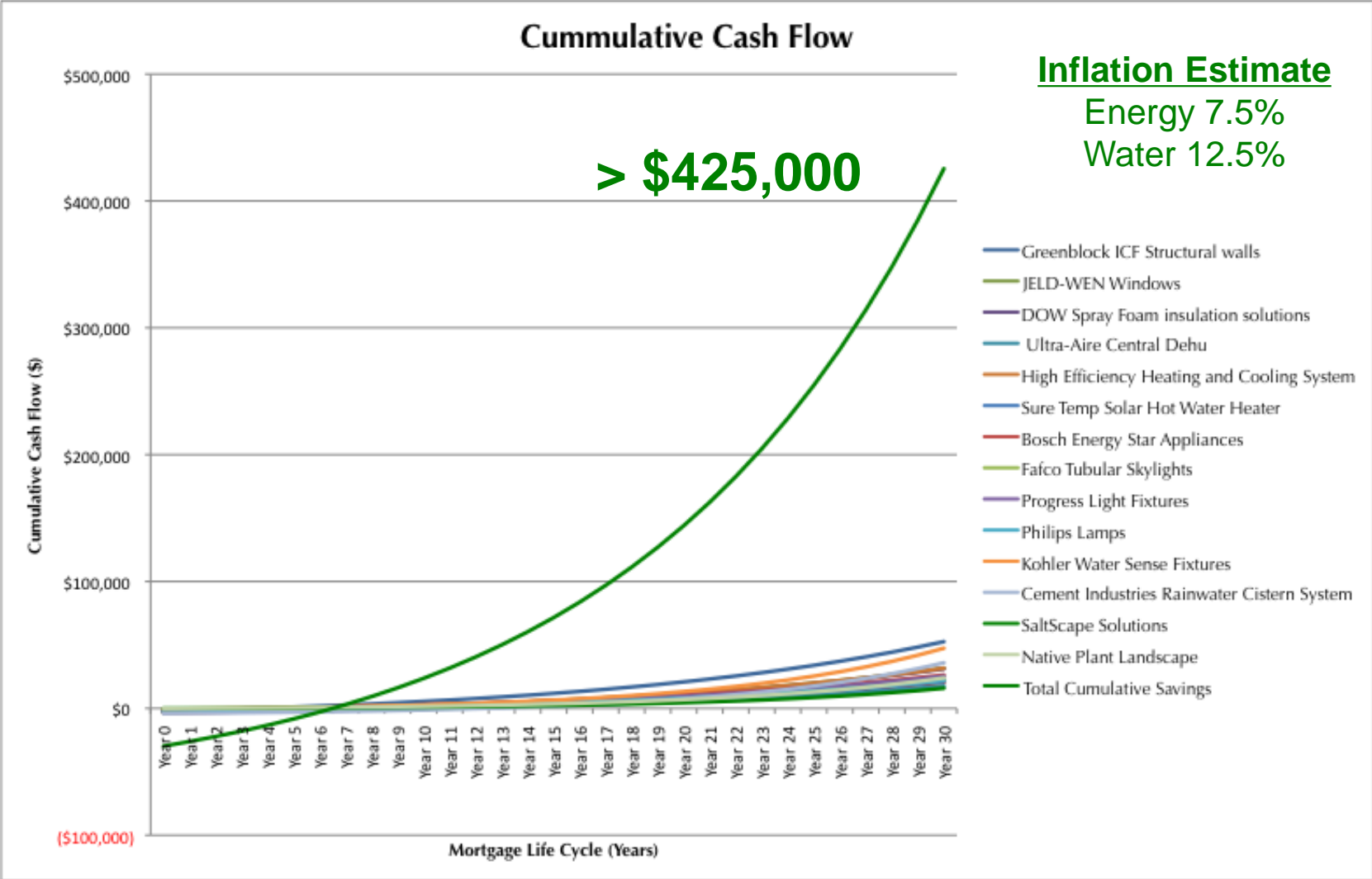
11 Energy related ingredients – Saving \$264/month

4 Water related ingredients – Saving \$40/month

4 Energy Ingredients made my house stronger – Saving \$500/month w/ insurance

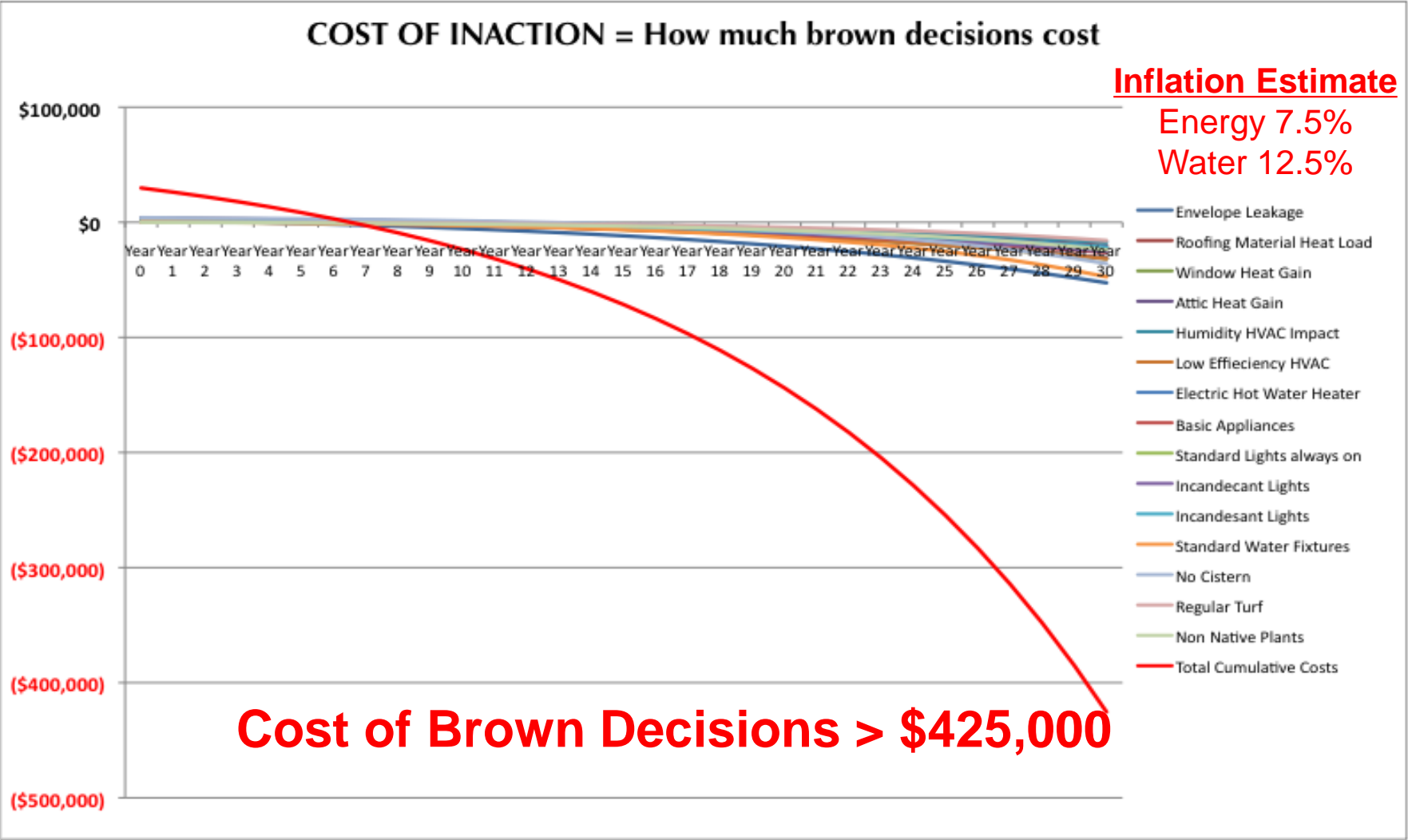
How Small decisions make a big impact

Learning lessons from my house – Power of ROI



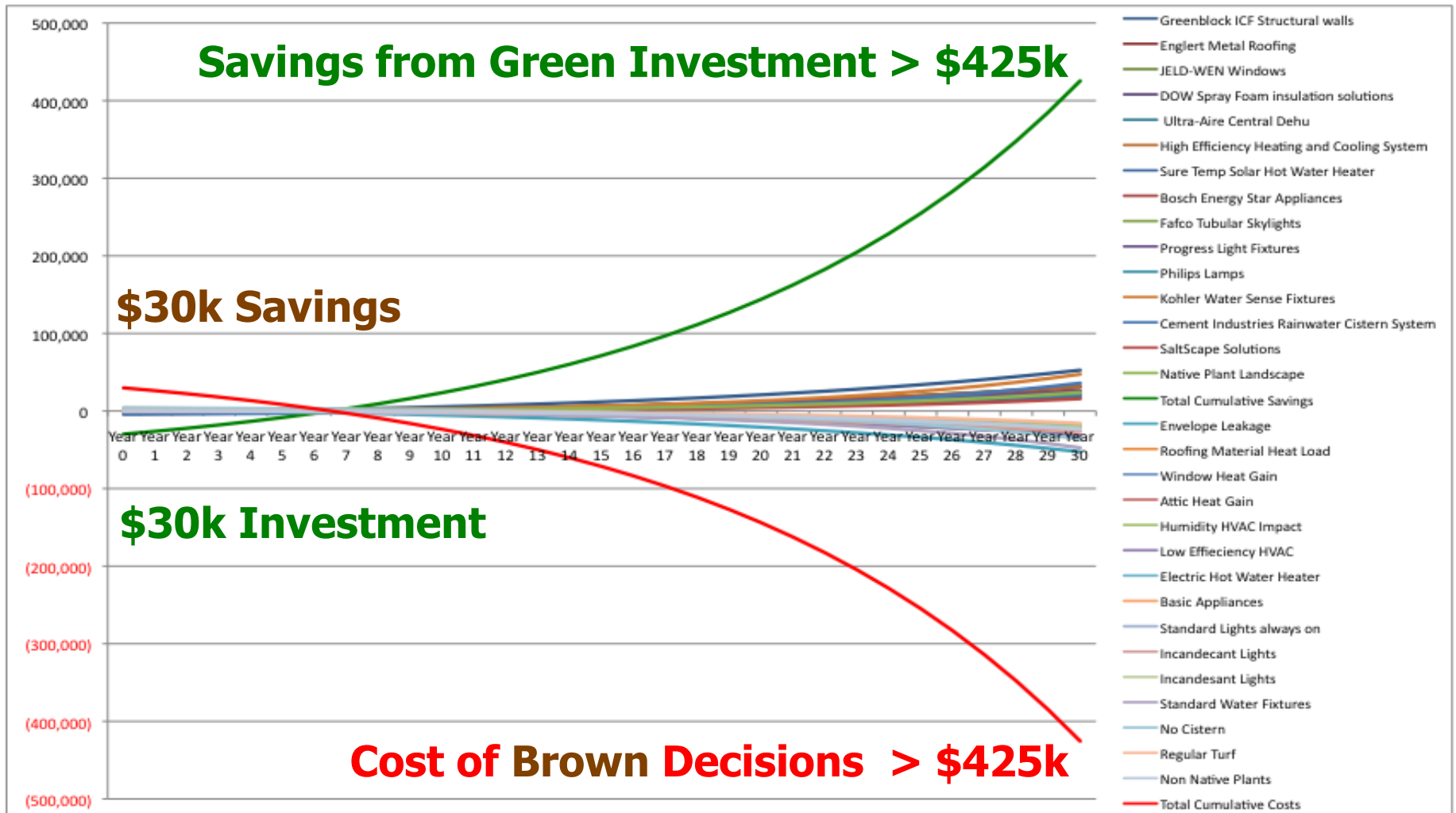
How Small decisions make a big impact

Learning lessons from my house – Power of COI



How Small decisions make a big impact

Learning lessons from my house – Two Paths

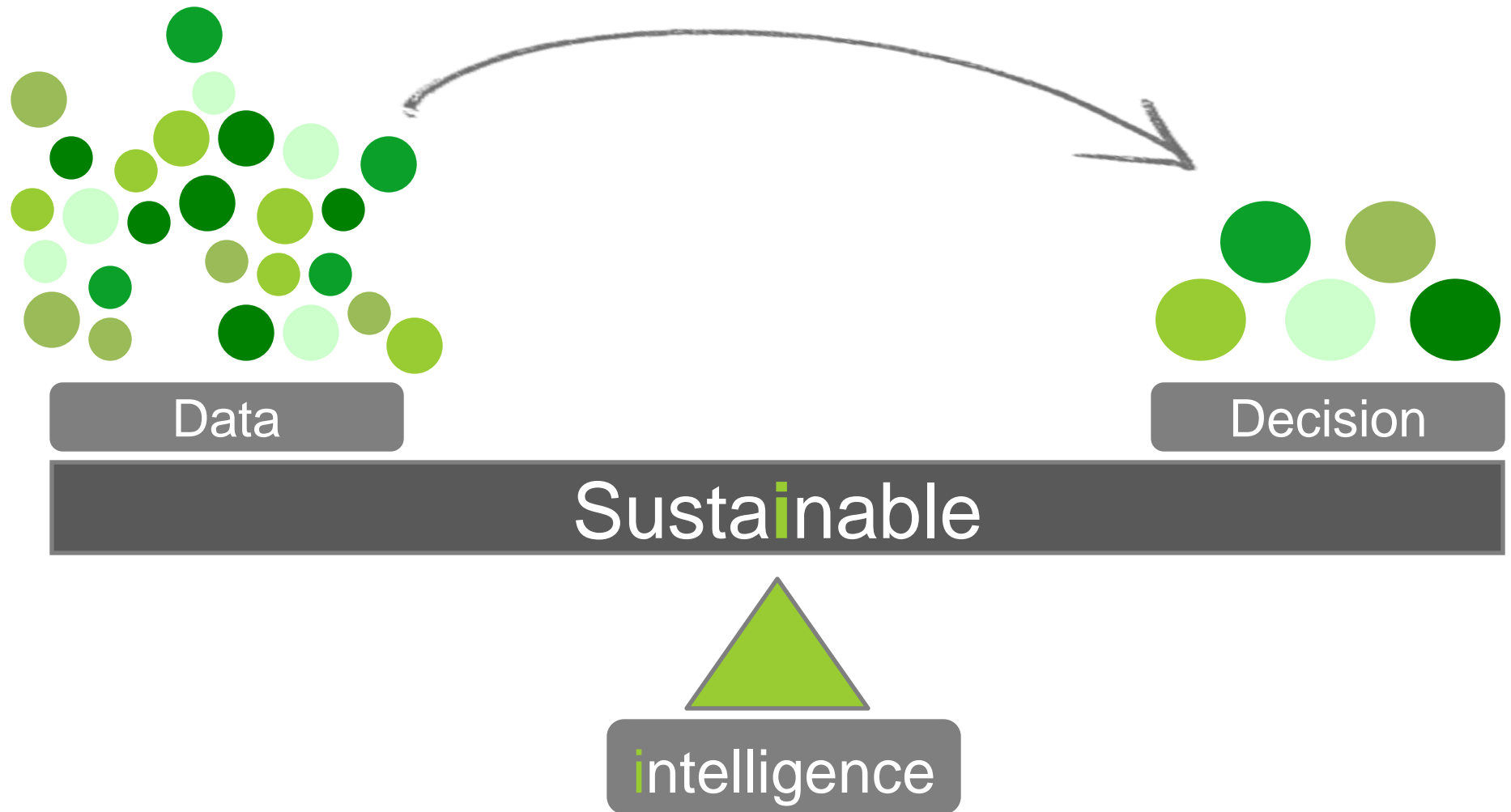


How we make sustainable decisions

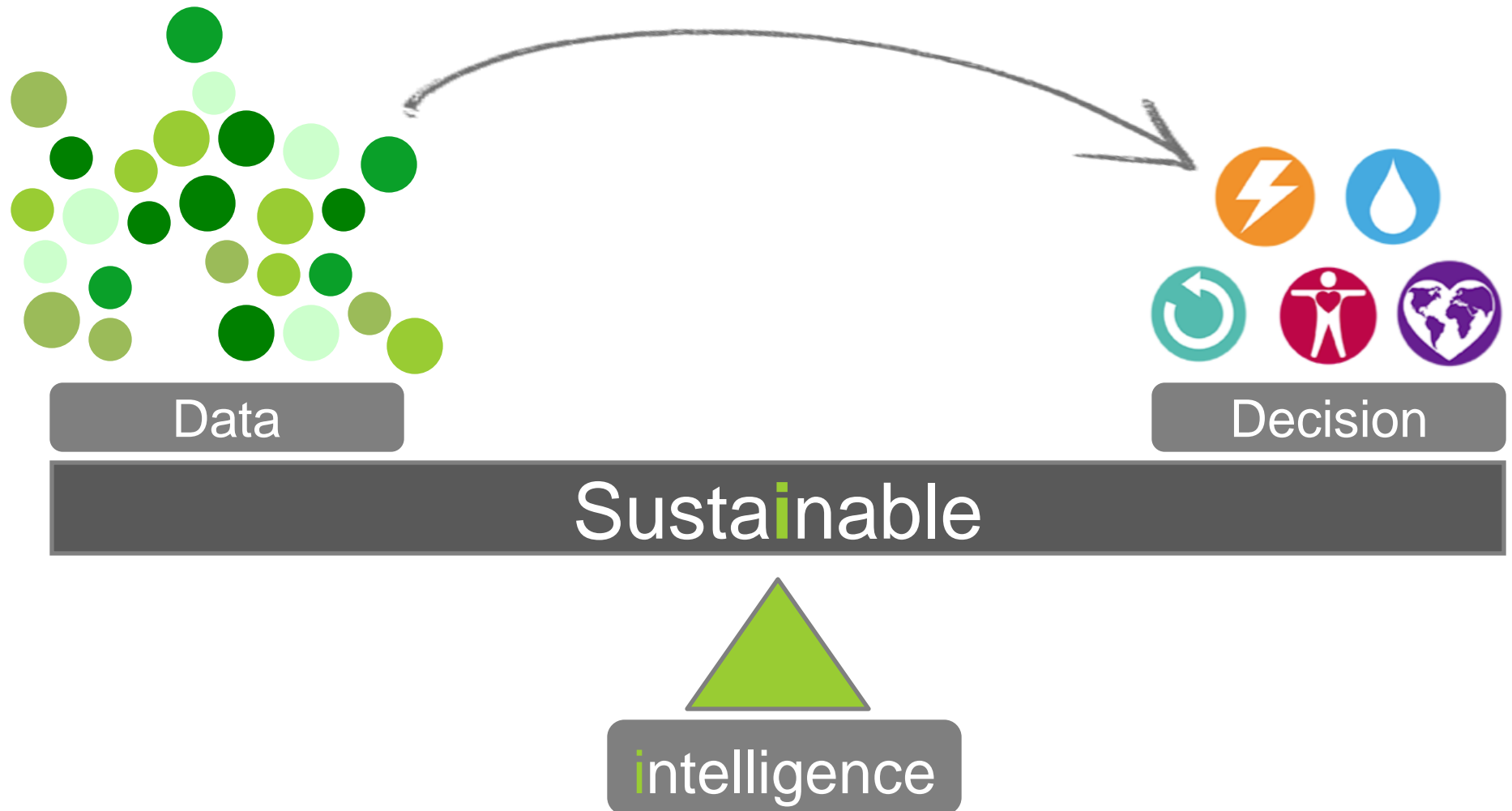
The sustainable decision makers dilemma



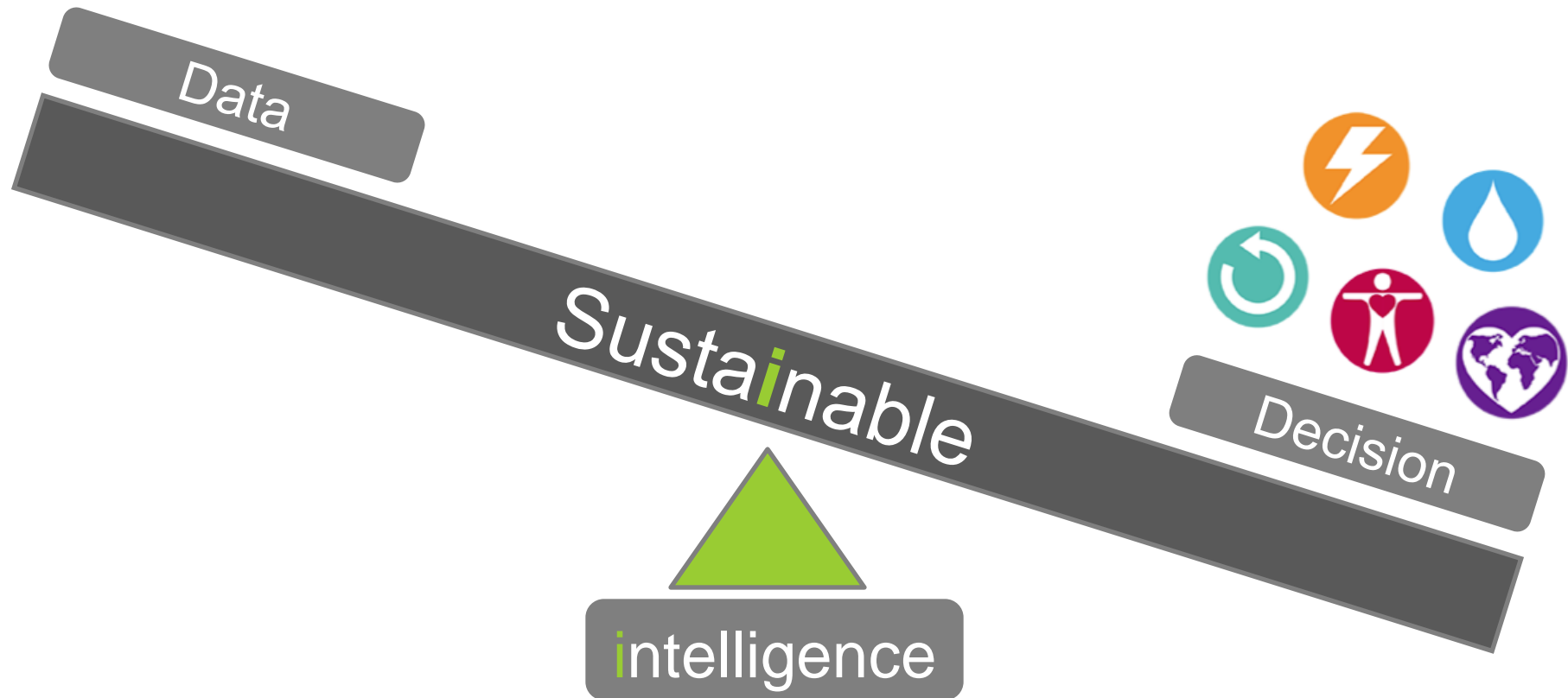
How do we increase sustainable decision making? Step 1: Simplify the data presented



How do we increase sustainable decision making? Step 2: Group metrics by impact areas



How do we increase sustainable decision making? Step 3: Decisions can be made quickly



simplicity > complexity



Energy



Water



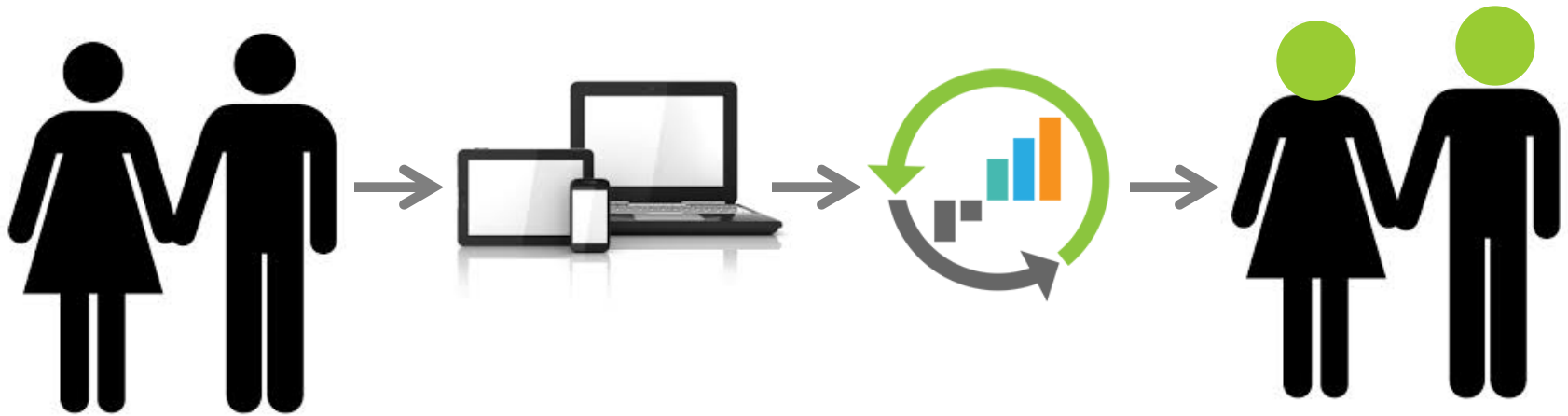
Lifecycle



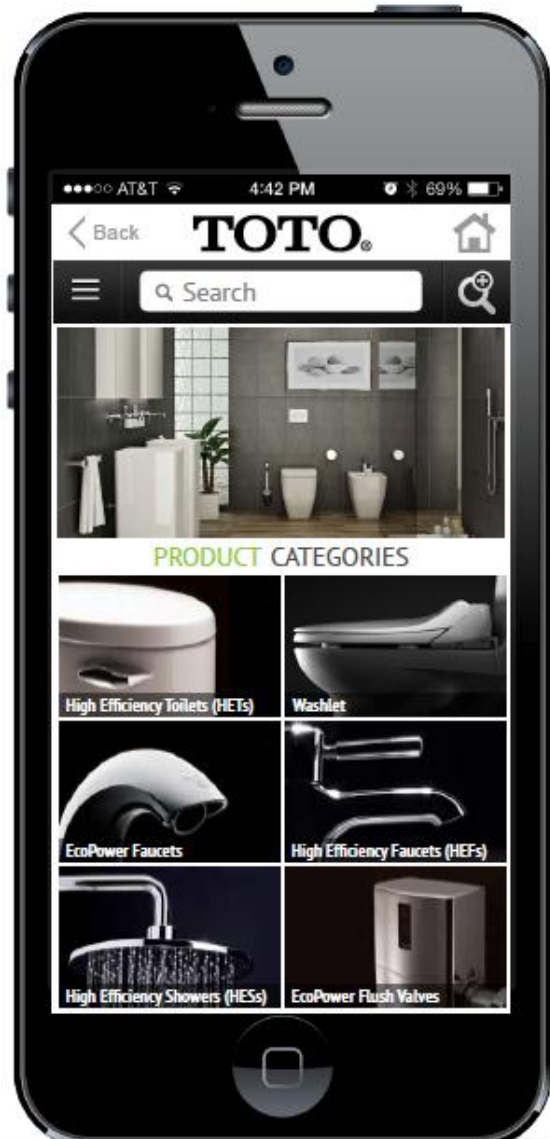
Human Health



Planet Health



Help people connect the sustainable benefits of the products to the real fiscal and health impacts of their lives



SEARCH

- Launch the App from any web connected device
- Clean graphically driven search and filtration

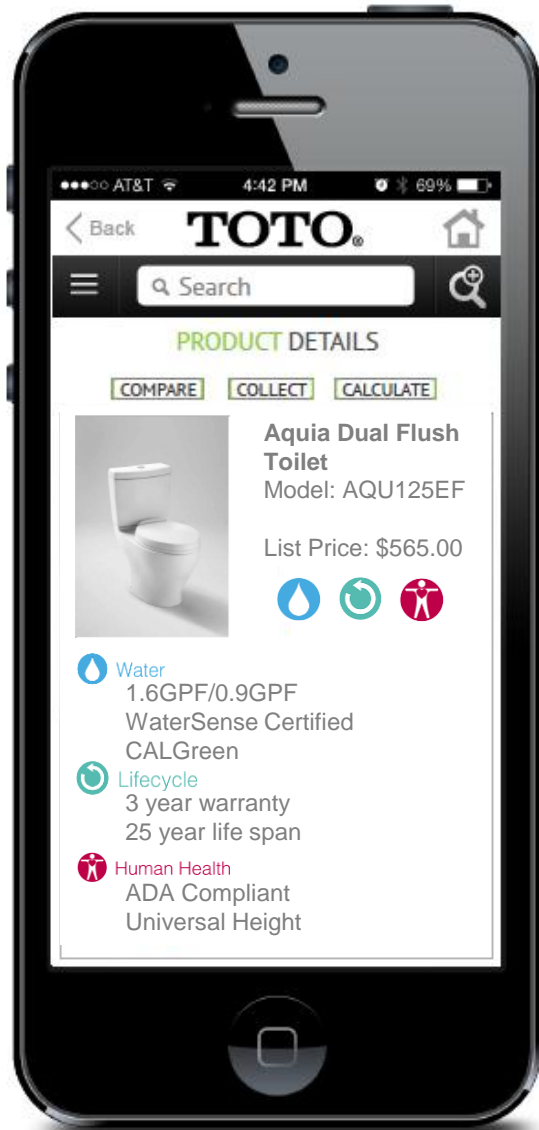


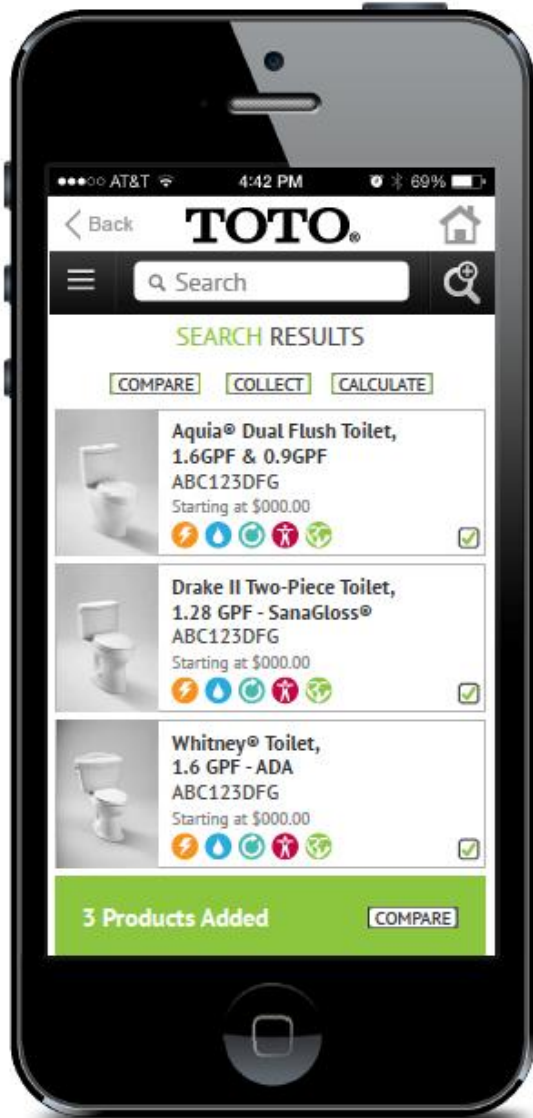
SEARCH RESULTS

- Simple to read format and structure
- Main impact category icons highlight additional data or calculators available
- User can compare, collect or calculate ROI and impacts

PRODUCT DETAIL

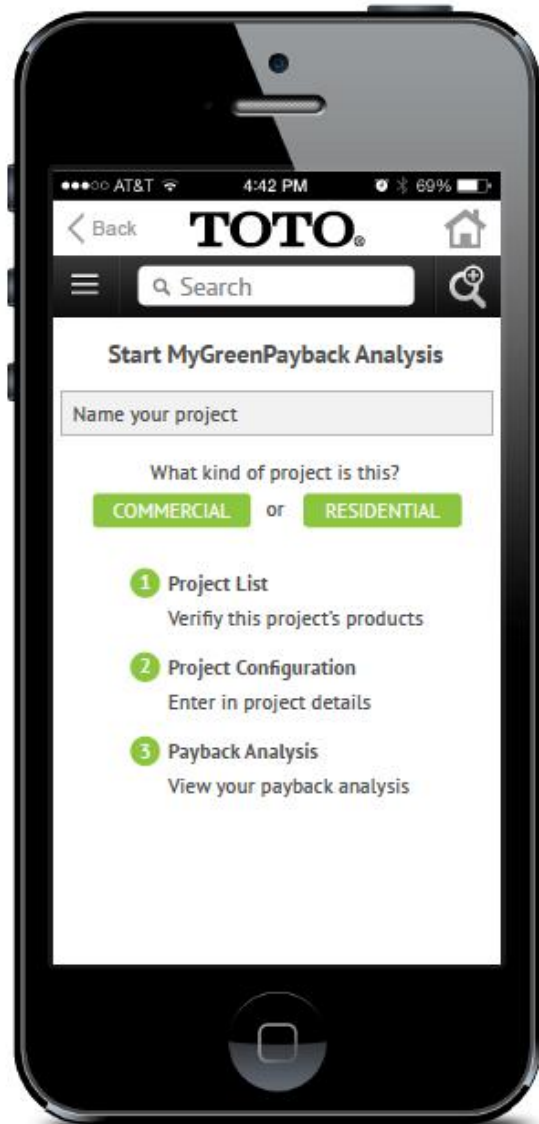
- Simple and clean attributes
- Main impact drivers are highlighted and explained





COMPARE

- Compare products and their impacts and ROI potential



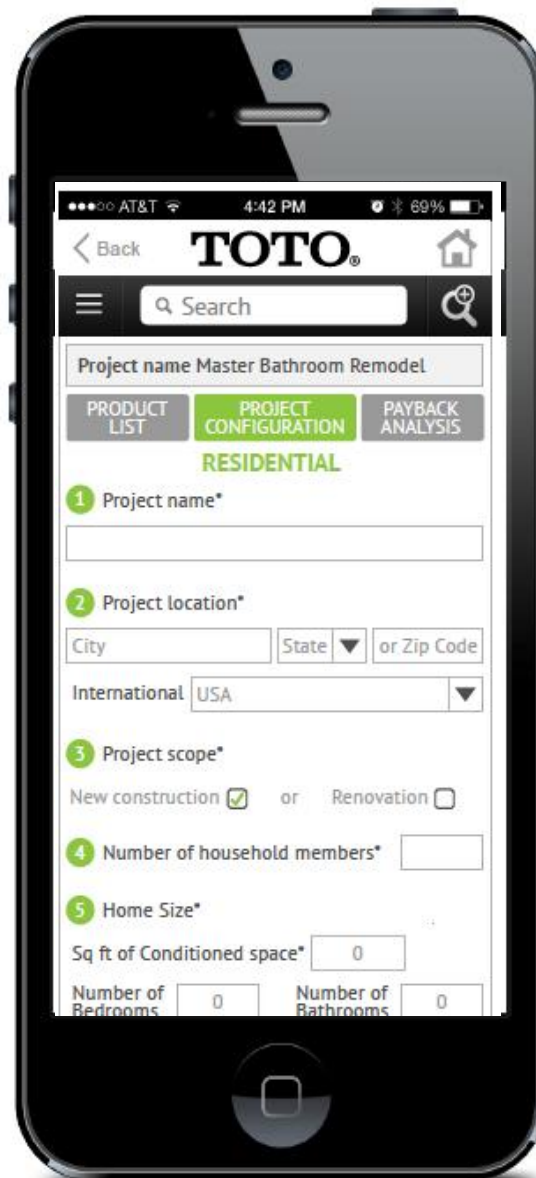
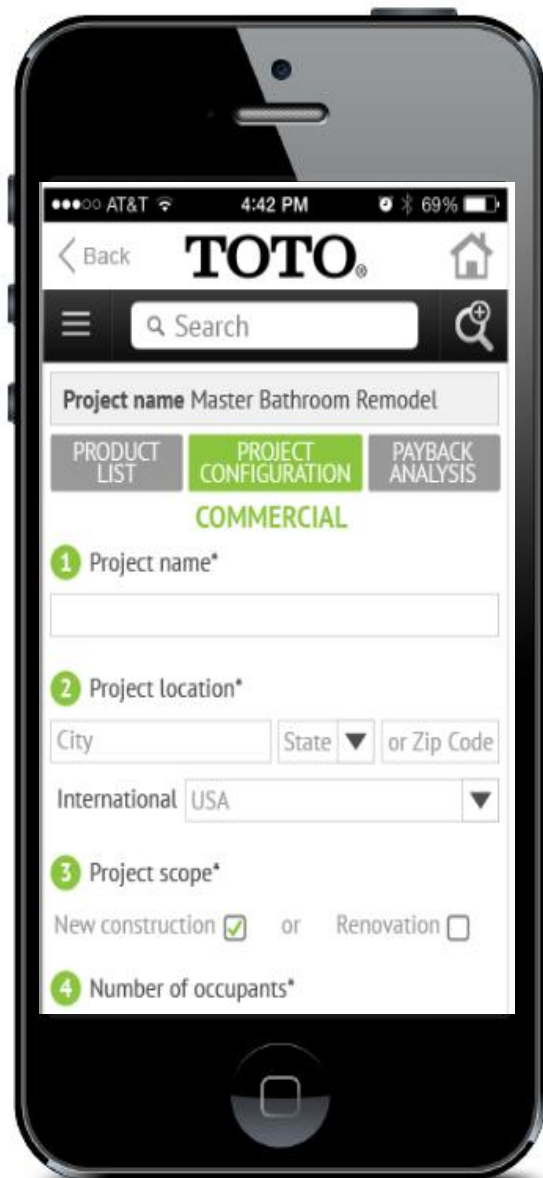
CREATE A PROJECT

- Start a Residential or Commercial Project to evaluate the ROI and Impact analysis



CONFIGURE PRODUCTS

- Configure Products with quantity and baseline products



CONFIGURE PROJECT

- Project Parameters for ROI calculations
- Operational Days/Hours
- Occupancy
- Energy and Water Costs



PAYBACK ANALYSIS

- ROI Payback Period
- ROI % for time horizon selected
- Combined view of financials
- Independent views
 - Energy
 - Water
 - Lifecycle
 - Human Health
 - Planet Health

Increasing sustainable decision making

Brands looking to better position themselves in the marketplace, need to improve the way they communicate their sustainable value proposition.

Overview of our topics today






Panel on Sustainable Urban Agriculture

- Solutions to Food Deserts:
 - Urban Agriculture, Edible Landscapes, Permaculture, Aquaponics
- Establishing a Food Hub in a Food Desert Area
- Social and Environmental Dynamics of a High Tech, Integrative, Sustainable Urban Farm on the Local Economy

Panel on Sustainable Design and Construction

- Integrated Design for Mixed Use Development
- What Makes Transportation Sustainable?
- Sustainable Goals Become Reality
- Sustainable Stormwater Design
- Incorporating Green Practices in Building Codes & Story of Shangri La Health Spa

Things to think about during the day

- What Scale do you operate on, when making the majority of your decisions?
- What impact areas drive the majority of your sustainable investments?  Energy  Water  Lifecycle  Human Health  Planet Health
- What role does design play in sustainability? Who do you think of as designers?
- How does Nature use design? Who are nature's designers? Are they active or passive?
- How is Agriculture connected to the built environment currently? Is it well integrated?
- Is Agriculture on a sustainable path?
- Do you feel that sustainability is currently integrated into design and construction practices? Is it an add-on?
- How can we get more folks thinking about sustainability?