**Design Assumptions**

1. Population Will Continue to Grow

2. Populations Will Grow Older

3. Populations Will Be Concentrated in Urban Areas

4. The Global Economy Will Double, Fastest in Emerging Markets

5. Supply and Distribution of Energy Will Be Transformed

6. Transportation Will Become More Automated

7. The Built Environment Will Be More Networked and Smarter

8. Global Temperature Will Rise, Climate Variability Will Increase

9. Sea Levels Will Rise

10. Freshwater Scarcity Will Become More Prevalent

11. Food Production Pressures Will Increase

12. Pollution Concerns Intensify

WAT, AGR, GRN, ENE, TRAN, IND/COM, RES, MIX, INST

**Design Innovations**

Water (WAT)

1 Water Crisis: Address Access to Clean Water

2 Water Retention

3 Agricultural Water Conservation Best Practices

4 Stormwater Trading

5 Waterseer® By Vici Labs

6 Learning Conservation from Cape Town, South Africa

7 Porous-floored Parking Garage

8 Bioretention

9 Double Dune System

10 Harbor-cleaning Devices

11 Water Desalination

12 Drinkable Book

13 Solar Irrigation Pump

14 Increased Cloud Seeding

Agriculture (AGR)

1 Organic Agriculture

2 Robots Fight Weeds

3 Rewilding; Letting Nature Take Its Course

4 Carbon Farming

5 Agritourism

6 Diversified Cropping Systems

7 Clean Energy Farming

8 Ecological Pest Management

9 Zero Waste Buildings for Food Growing

10 Food Forests

11 Urban Farming – Urban Agriculture

12 Rooftop Gardening

13 Aquaponics

14 Grass Run Farms®

15 Drones in Agriculture

16 Solar Crop Pumps

17 Algae as Food

18 Controlled-environment Agriculture (CEA)

Green Infrastructure (GRN)

1 Resilient Landscape Infrastructure

2 Resilient Rural Community Landscape Infrastructure

3 Integrated Vegetated Stormwater Infrastructure

4 Linear Vegetated Corridors as Linear Parks

5 Integration of Vegetation into Building Design

6 Genetically Modified Trees and Engineered Trees

7 Connectivity for Resiliency

8 Ecosystem Services of Green Infrastructure

9 Connected Green Infrastructure

10 Green Urban Streets

11 Daylighting Lost Streams and Rivers

12 Green Roofs

13 Restoring the Riparian Ecosystem

14 Urban Riparian Education Spaces

15 Climate Change Adaptation

16 Coastal Urban Resilience

17 Resilient Green Coastal Infrastructure

18 Mangroves for Coastal Resilience

Energy Infrastructure (ENE)

1 Renewable Energy Sources

2 Liam F1® Urban Wind Turbines

3 Solar Roads

4 Tidal Power

5 Stored Energy in the Sea®

6 Flying Wind Wheel-Altaeros®

7 Airborne Wind Turbines

8 Enerkite®

9 X-wind Technology

10 Electrostatic Wind Energy Convertor-Mecanoo®

11 Vortex Bladeless-Icewind®

12 Small Wind Power on Power Pylons

13 Developments in Battery Storage

14 Water Reservoirs as Pump-storage Battery

15 Anerdgy Windrail®

16 Ecopole®

17 Concrete Semi-divers

18 Parabolic Channel Solar Collectors

19 Capillary Tube Mats in External Walls of Buildings

20 Semiconductor-insulator Solar Cells

21 Brine-water Heat Pumps

22 Geothermal Energy in Disused Mines

23 Power to Gas

24 Redox-flow Battery

25 Dutch Windwheel®

26 Segmented Ultralight Morphing Motor

27 Sheerwind Invelox®

28 Compressed Air Reservoirs

29 Windcube®

30 Terracool®

31 Windflock®

Transportation (TRA)

1 Autonomous Vehicle Revolution

2 High Speed Rail

3 Maglev High Speed Trains

4 Passenger Rail Corridors

5 Hyperloop Transport

6 Smart Cars for a Smarter Future

7 Electric Autonomous Vehicles (EAV)

8 Self-driving Cars Disrupt the Rail Industry

9 Adapting to the “Waze Wars”

10 Autonomous Transport Pods for Public Transit

11 Seabubbles® Water Taxi for Urban Waterways

12 Autonomous Air Taxis

13 Bikeshares and E-bikes Redefine Biking

14 Bikeshares for Climate Change Mitigation

15 Integrated Transportation and Energy Infrastructure

16 Photovoltaic Highways

17 Heat Reflective Coating Cools Roadways

18 Light Color Paint Cools Transport Network

19 Canal-path Transportation

20 Permeable Pavement for UHI and Stormwater Management

Industry and Commerce (IND/COM)

1 Fourth Industrial Revolution (Industry 4.0)

2 Industrial Robotics

3 Internet of Things and Cyber-physical Systems

4 3d Printing and CNC Devices

5 Rapid Prototyping and Product Individualization

6 Computer-integrated Manufacturing

7 White Biotechnology

8 Renewable Energy Sources

9 Nanotechnologies

10 Cultured Meat (Clean Meat, In Vitro Meat)

11 Artificial Intelligence

12 Technological Singularity

13 Internet-based Commerce

14 Internet-based Commercial Distribution

15 The Future Office Workspace

16 Re-invented and Evolving Small Business

Low Density Residential (RES)

1 Building Integrated Solar PV Home

2 Vehicle–to–everything (V2x) Integration

3 Direct Current (Dc) Microgrid

4 Ultrasonic Clothes Dryers

5 Smart/electrochromic Windows

6 3d Printed Buildings and Materials

7 Caloric Effect Solid State Refrigeration

8 Electricity and Desalination via Charge Potential of EZ Water

9 Reduced GHG Concrete Emissions

10 Building Integrated Atmospheric Water Generators (AWG)

11 Adaptable Modular Housing

Mixed Housing and Commercial (MIX)

1 Mixed Use Development

2 Custom-build Place-making

3 Citizen-responsive Smart Cities

4 Emerging Public/private Spaces

5 Technology for Multi-dimensional Use of Space

6 Technology and Connectivity in The Urban Fabric

7 The Sharing Economy

8 The Future Office Workspace

9 Population Distribution and Urban Growth

10 Managing High Density Locally

11 Urban Operating Systems

12 Innovation Districts

13 Communication-mediated Society

14 Compact Sustainable Neighborhoods

15 Smart Connected Mobility

16 Sustainable Urban Infrastructure

Institutional (INS)

1 Smart City Privacy

2 Future Healthcare Technology

3 Healthcare Records and Information Technology

4 Home Healthcare Delivery

5 Future Healthcare Choices

6 Evolving Education for Future Needs

7 Education-individualized Learning

8 The Future of E-learning

9 Evolving Forms of Religious Space

10 Sports Venue Innovation

11 Diversification in Entertainment Venues

12 Accommodating Street Festivals