

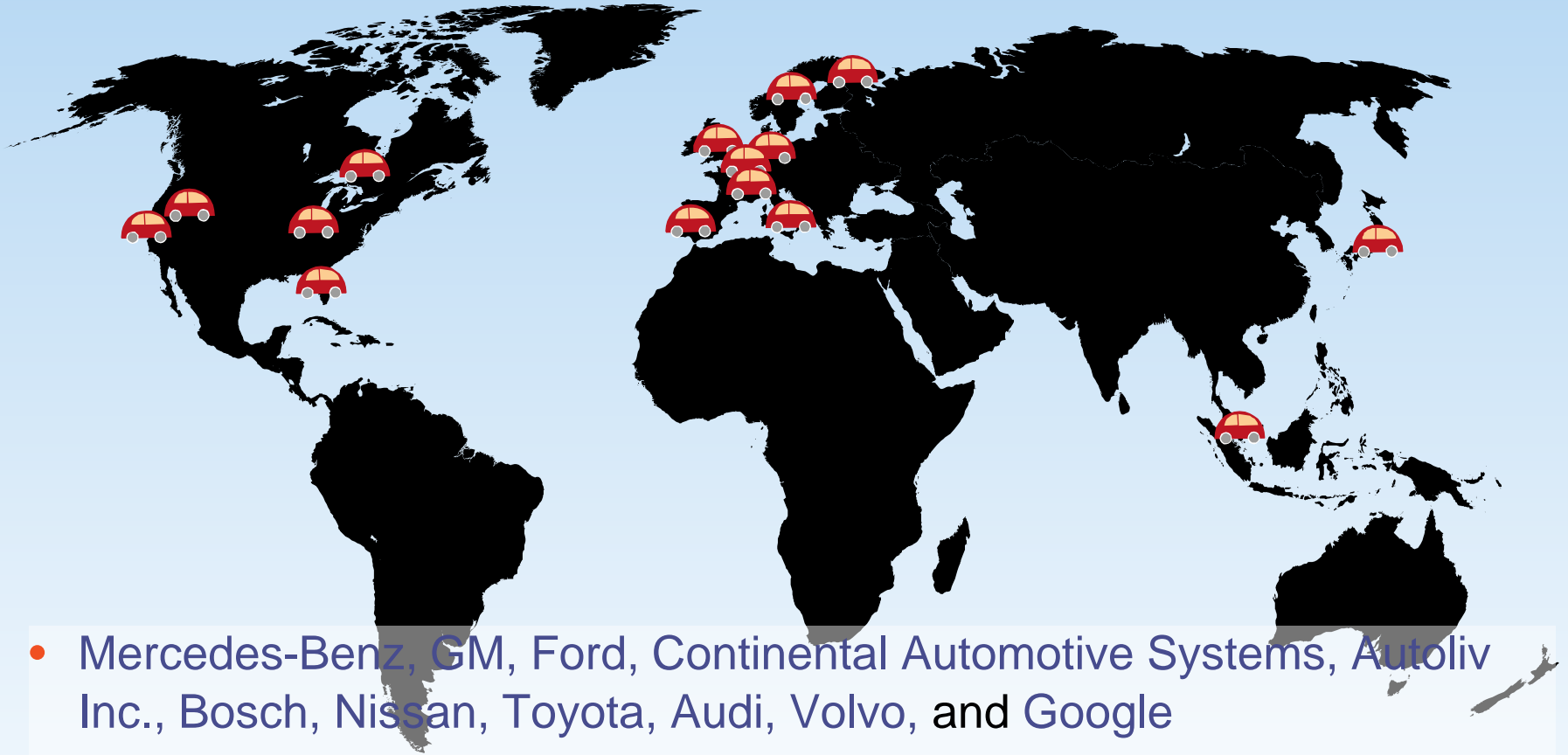
Designing a Driverless World

22 October 2014

ULI Sustainable Development Council: Lightning Round

John Eddy, Principal, Arup

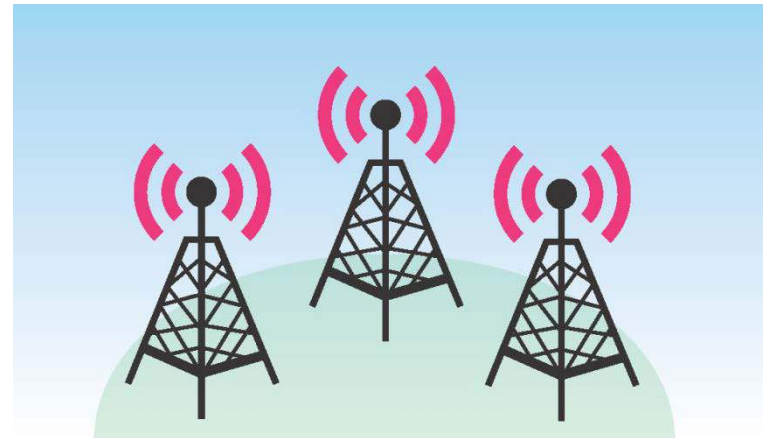
Who is in the Game?



- Mercedes-Benz, GM, Ford, Continental Automotive Systems, Autoliv Inc., Bosch, Nissan, Toyota, Audi, Volvo, and Google
- In 2010, four electric autonomous vans successfully drove 8000 miles from Italy to China.

Imagining a Future with Driverless Cars

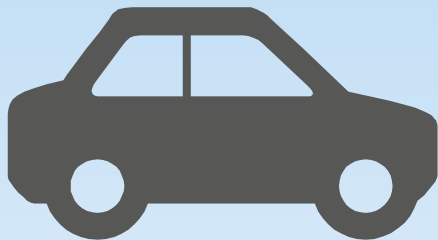
- Door to door autonomy
- Full take-up
- Mobility as a service
- Per capita fleet size reduction
- Road capacity increases
- Electric, quiet, non-polluting
- Goods delivery is automated
- Automated emergency response
- Transit will be automated
- Pricing and incentives balance demand
- No new infrastructure
- Mobility costs will decrease





Decreasing Cost of Mobility

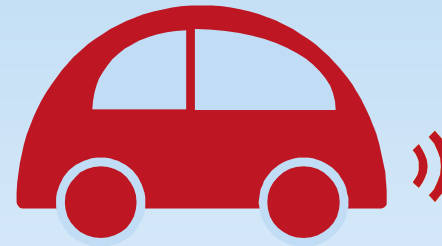
2012



Privately Owned Vehicle

55.5¢

Future

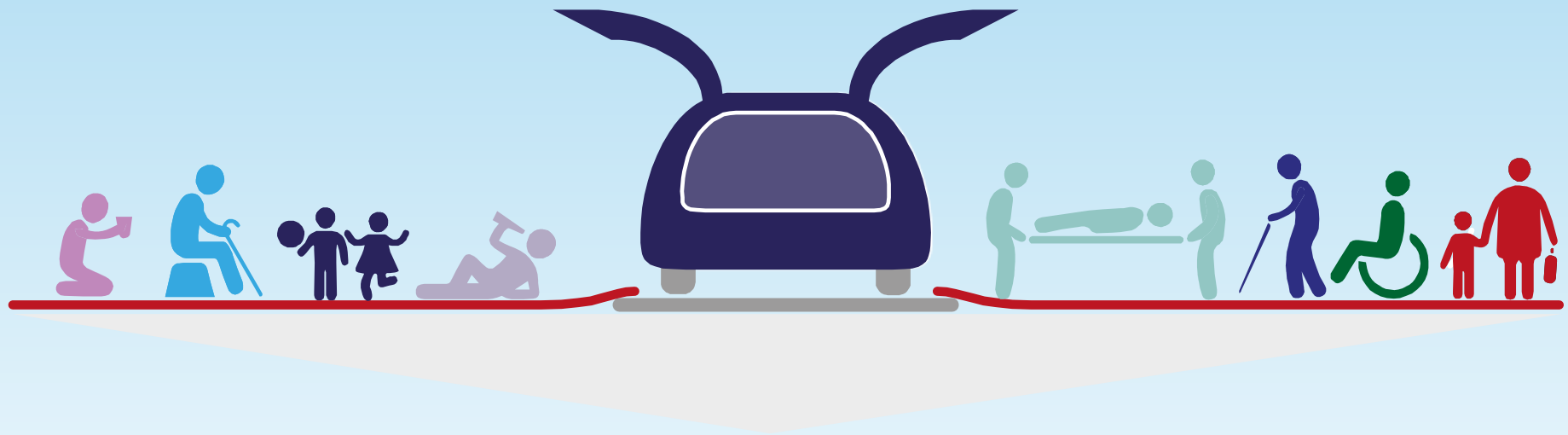


Full Autonomous Vehicle

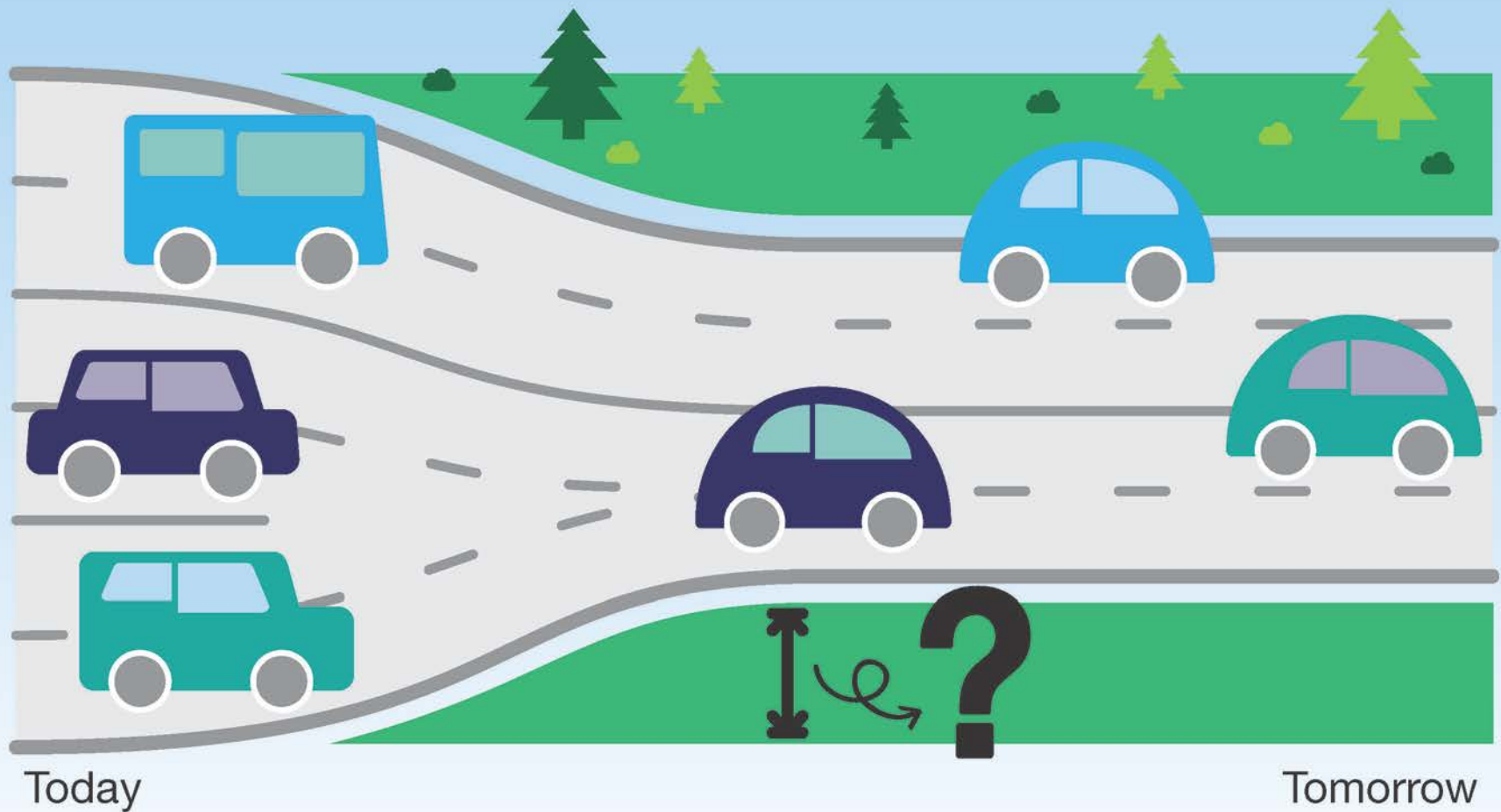
15¢

**How would you design
streets and places differently?**

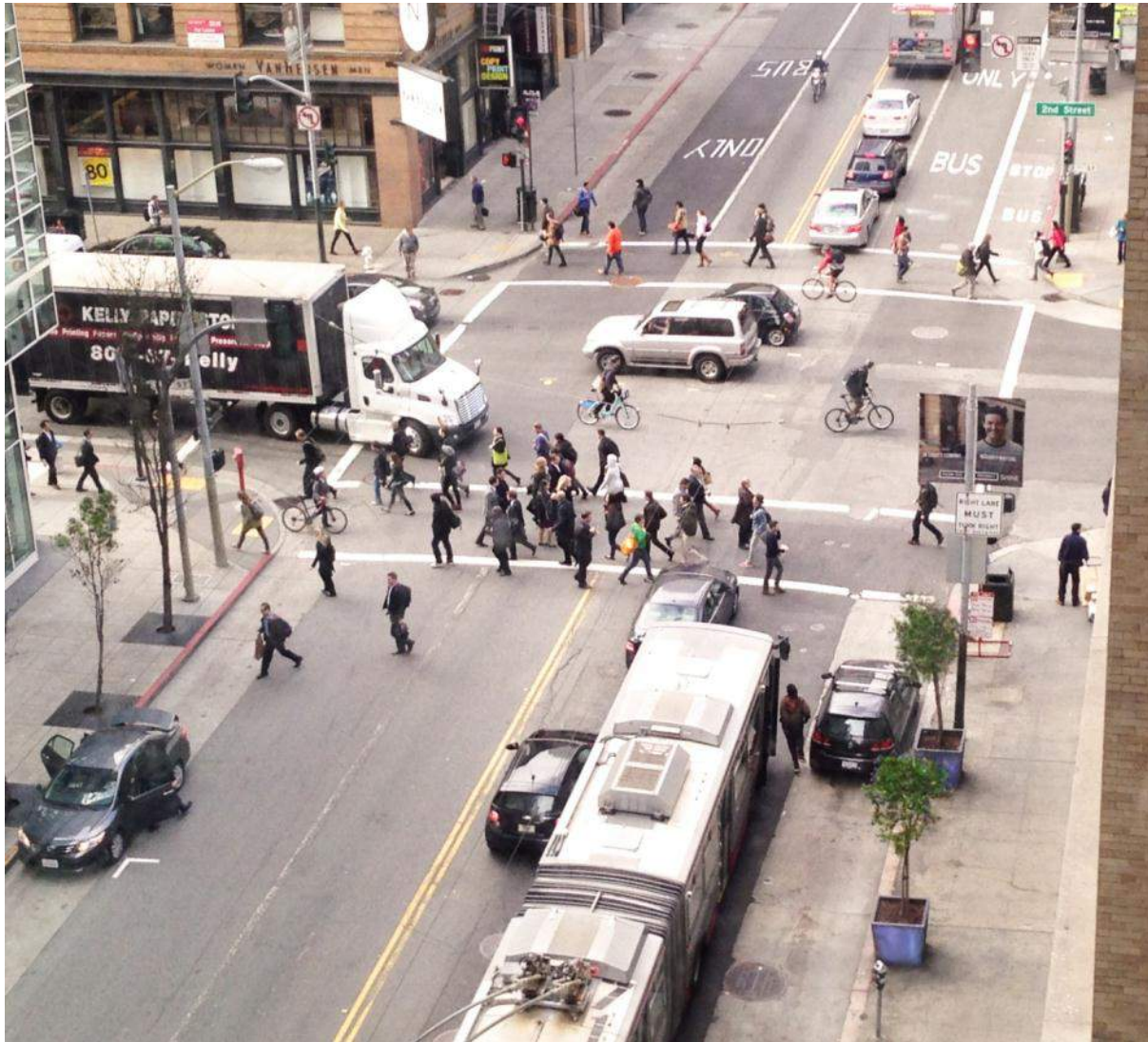
Access to Mobility: A chauffeur for all



Road Network Form: Road Diet



The Urban Intersection

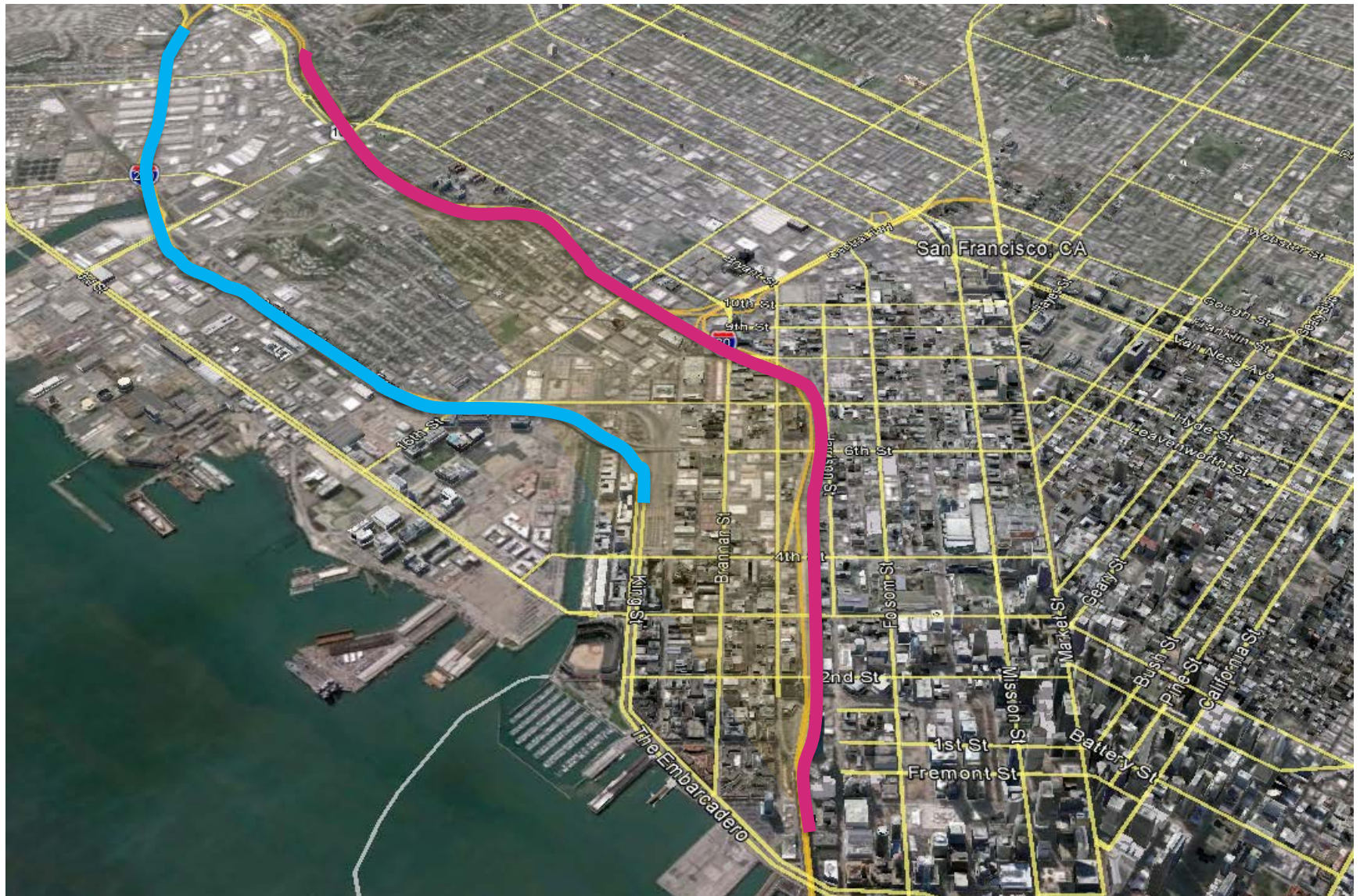




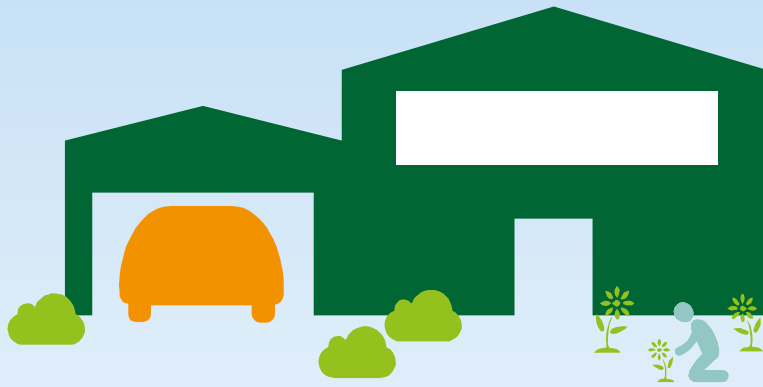
The Urban Intersection



Blurring the Road Hierarchy



Residential Form: Is the garage extinct?



Watch-It: Sprawl

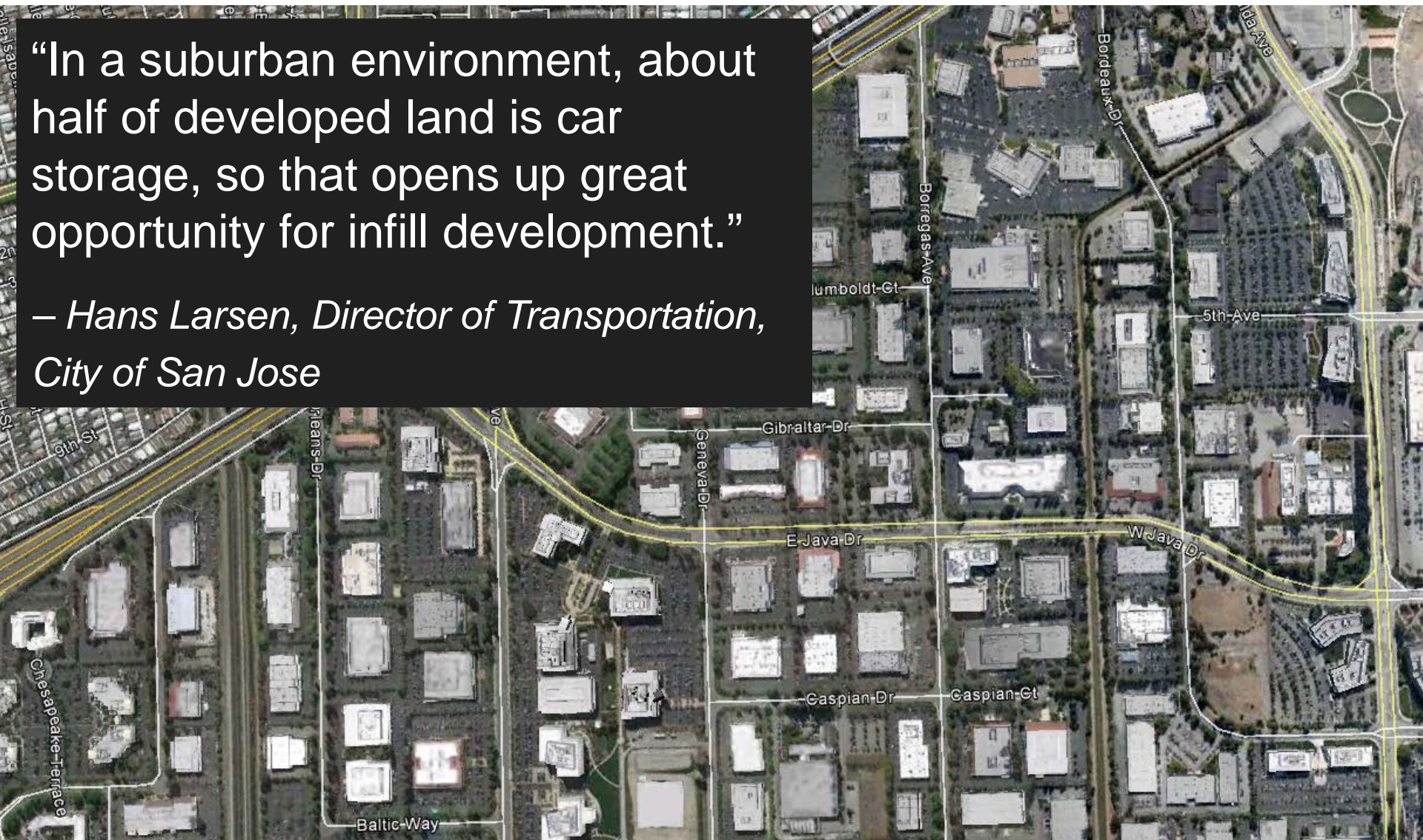




Land Value: Increasing density

“In a suburban environment, about half of developed land is car storage, so that opens up great opportunity for infill development.”

– Hans Larsen, Director of Transportation, City of San Jose



Safety: Cars don't hit people; people do



When?

1908

2014

2017

2020

2025

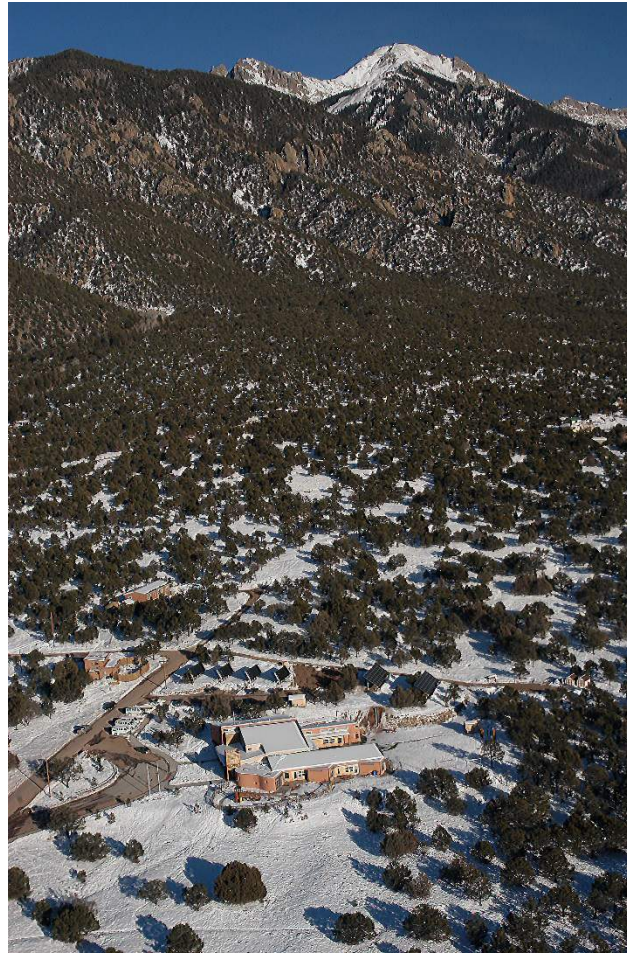
User Experience: What will you do?



Thank You!



A Solar Breakthrough from the Ground Up



Agenda:

- Background
- Decision Making Process
- First-of-its-kind Application
- Results

Community of Crestone, Colorado



Former School



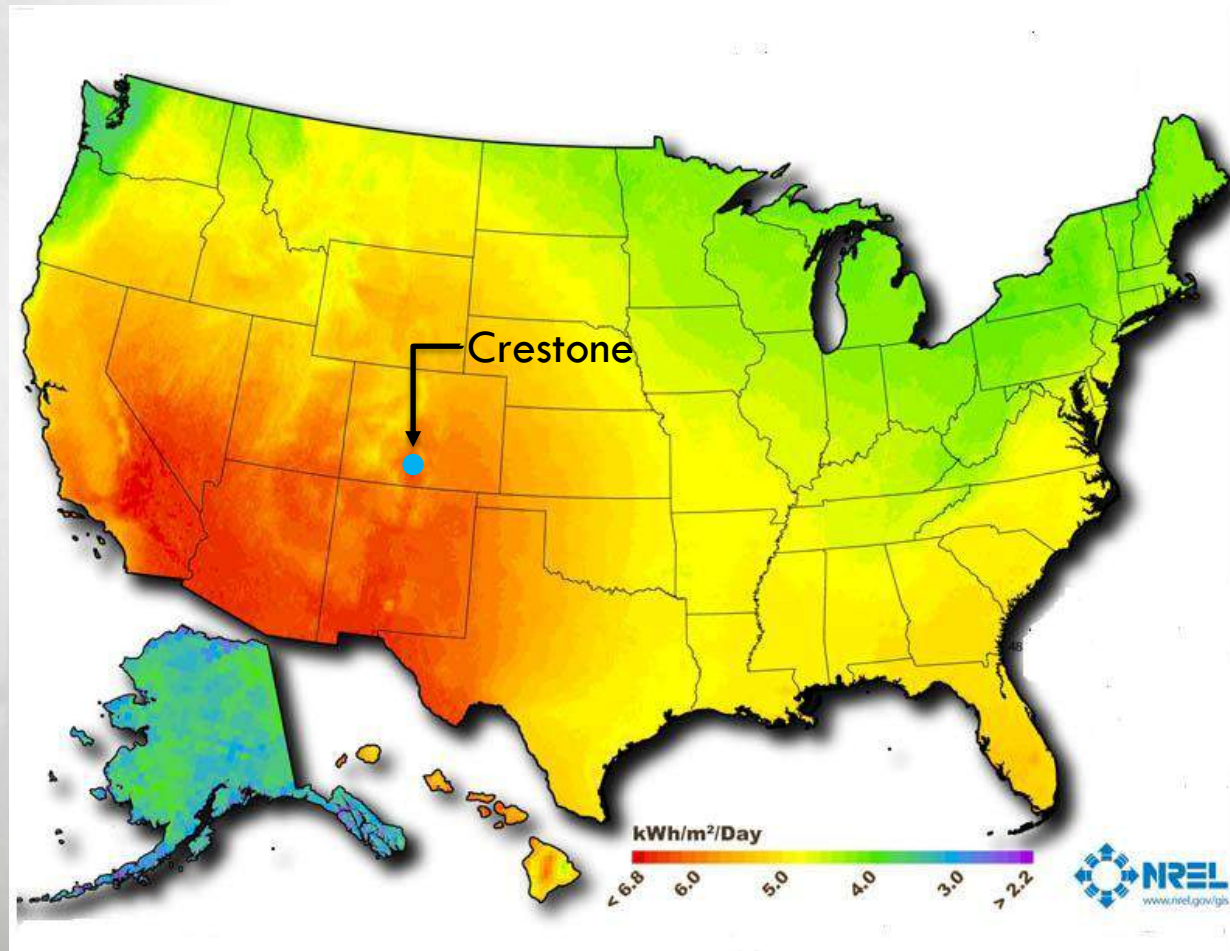
New School



New School Building



Solar Resource Map



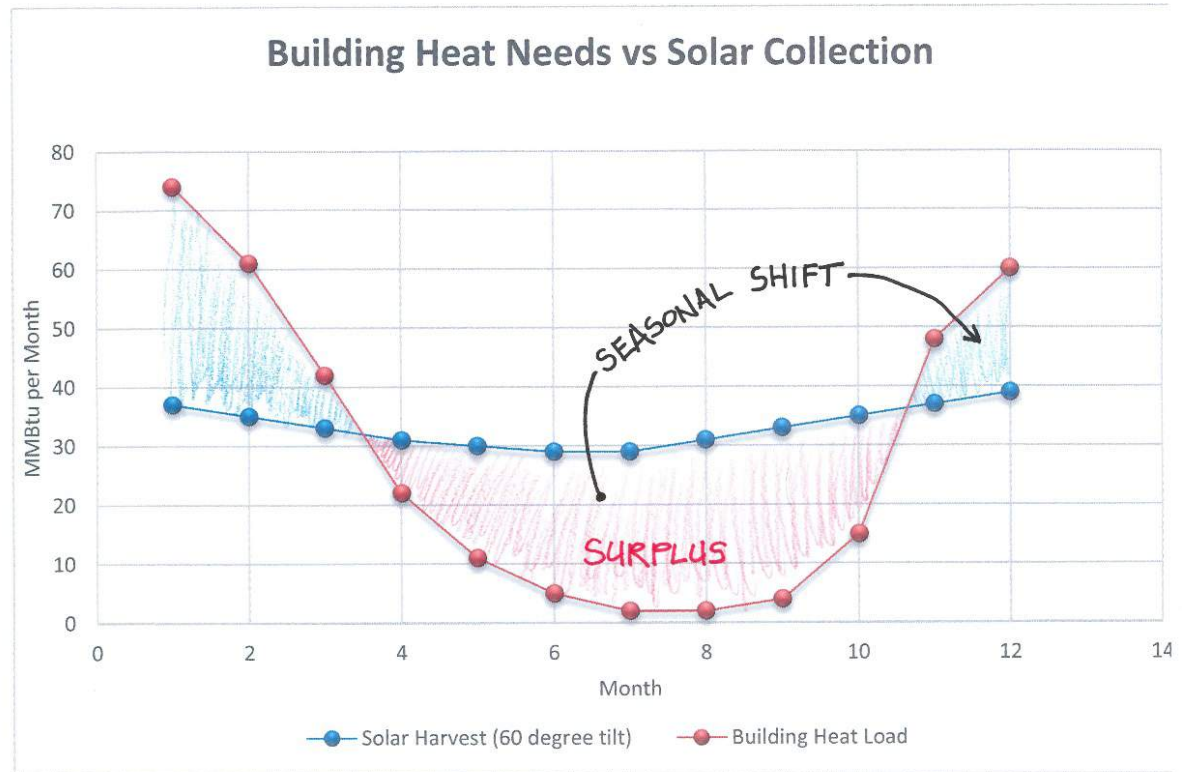
Solar Collectors



Thermal Collectors - 60° Tilt



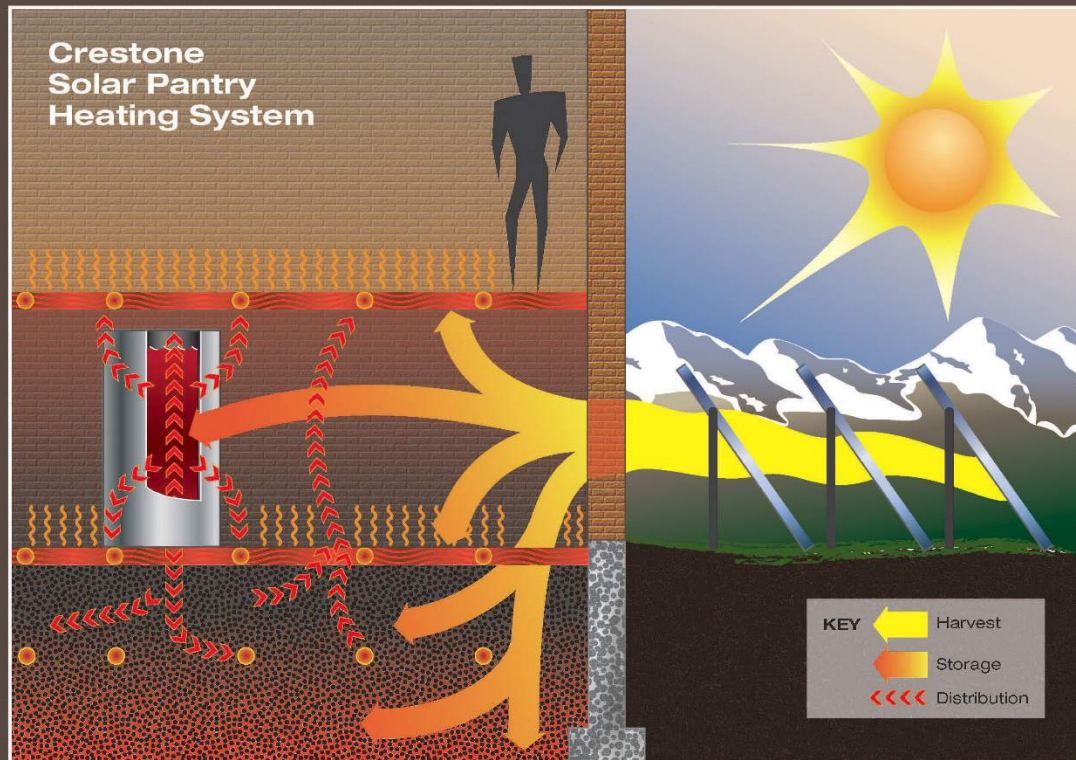
Load Profile vs Solar Availability: The case for Seasonal Shift



Ground Battery



“Solar Pantry” Concept



Results

- Median School = 123 kBtu/sf-yr
- DOE Bnchmrk = 97 kBtu/sf-yr
- CCS Actual = 11 kBtu/sf-yr

“I would recommend this system to any school district in Colorado.”

-Michael Hays, CCS Director

\$\$\$

- Total utility costs for 15,000sf building: \$4,900/yr
- Savings of about \$29,000/yr compared to DOE Benchmark
- Equates to savings of about \$2,160 per student over their K-8 career.

More about \$\$\$

- In the 'Real World'...IRR would be about 8 years.
 - Downsized base heating plant by 50%
 - Relatively high utility rates (for Colorado)

If this system is of value in Crestone...

It is certainly a strong consideration for other applications and locations:

- Colder climate (zones 6, 7, 8)
- Owner-operated facilities
- Adequate space for solar panels
- Low-rise
- Utility rebates are helpful

Questions?



Community Center



Community Center

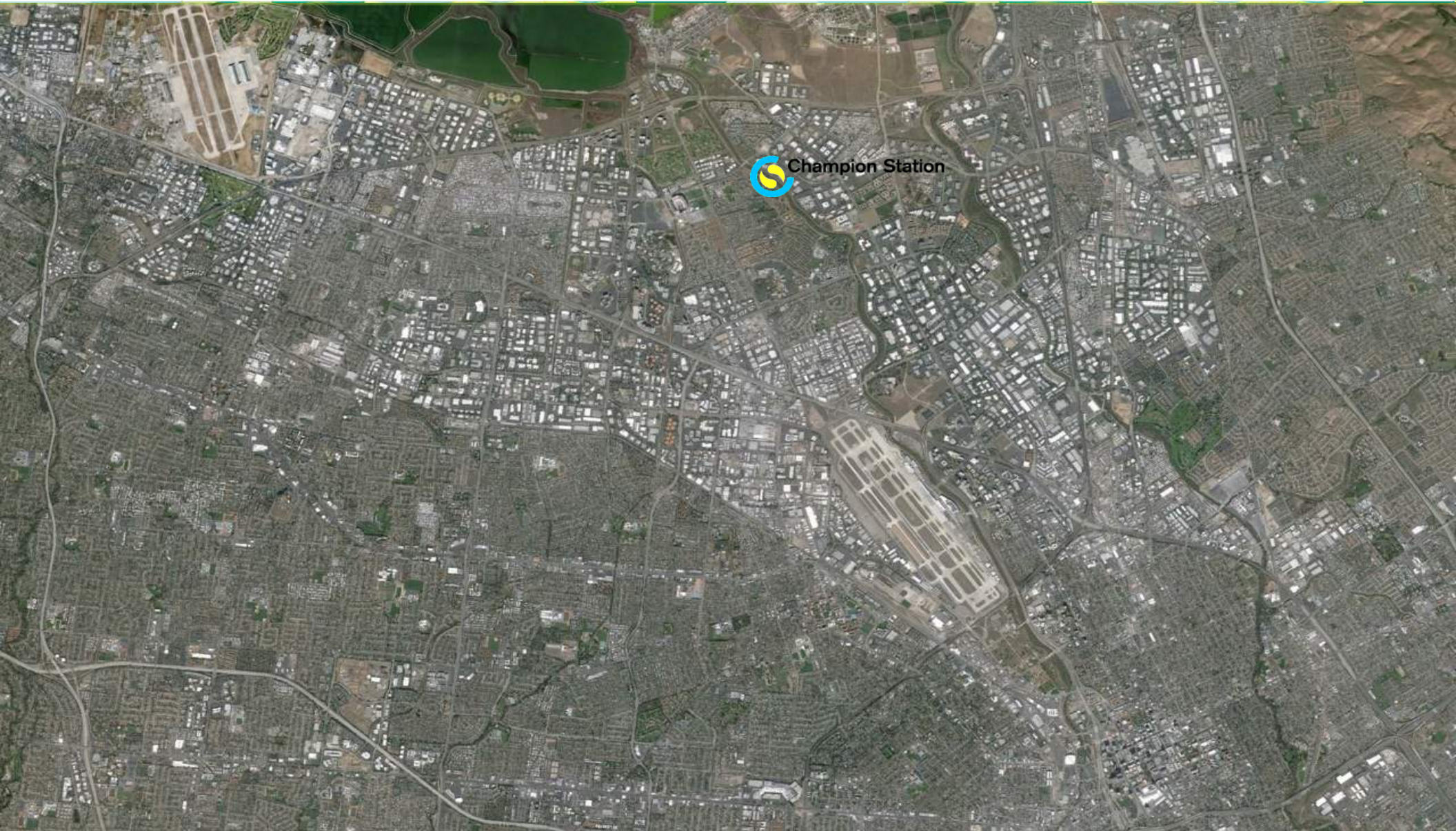
- Harry and Mark---
We just had our first community event at the new CCS ---a halloween carnival. It was wildly joyful and successful. If there was any doubt that this building has entirely changed the meaning and configurations of community that are possible here---the simple act of the home-made halloween carnival completely confirmed the power of this building. People filled the building... ...People who don't even have KIDS came and just hung out. Why? Because there is a space for it now. THANK YOU!!!! just incredible to see it filled with so much community life and helping to create that community in new ways. Thank you and pass on my love to all. k



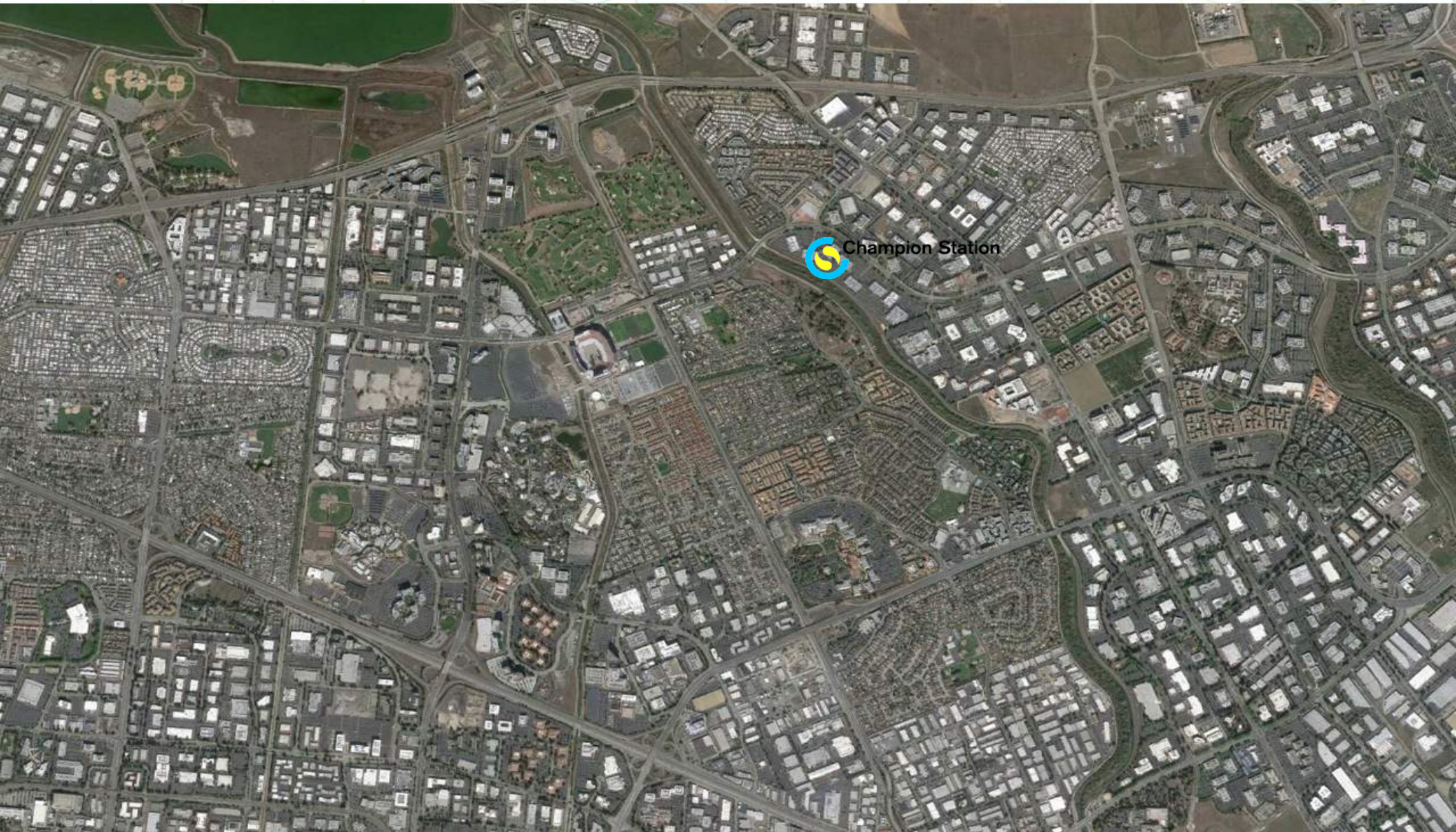
Champion Station:

(Re)developing a Healthy Workplace

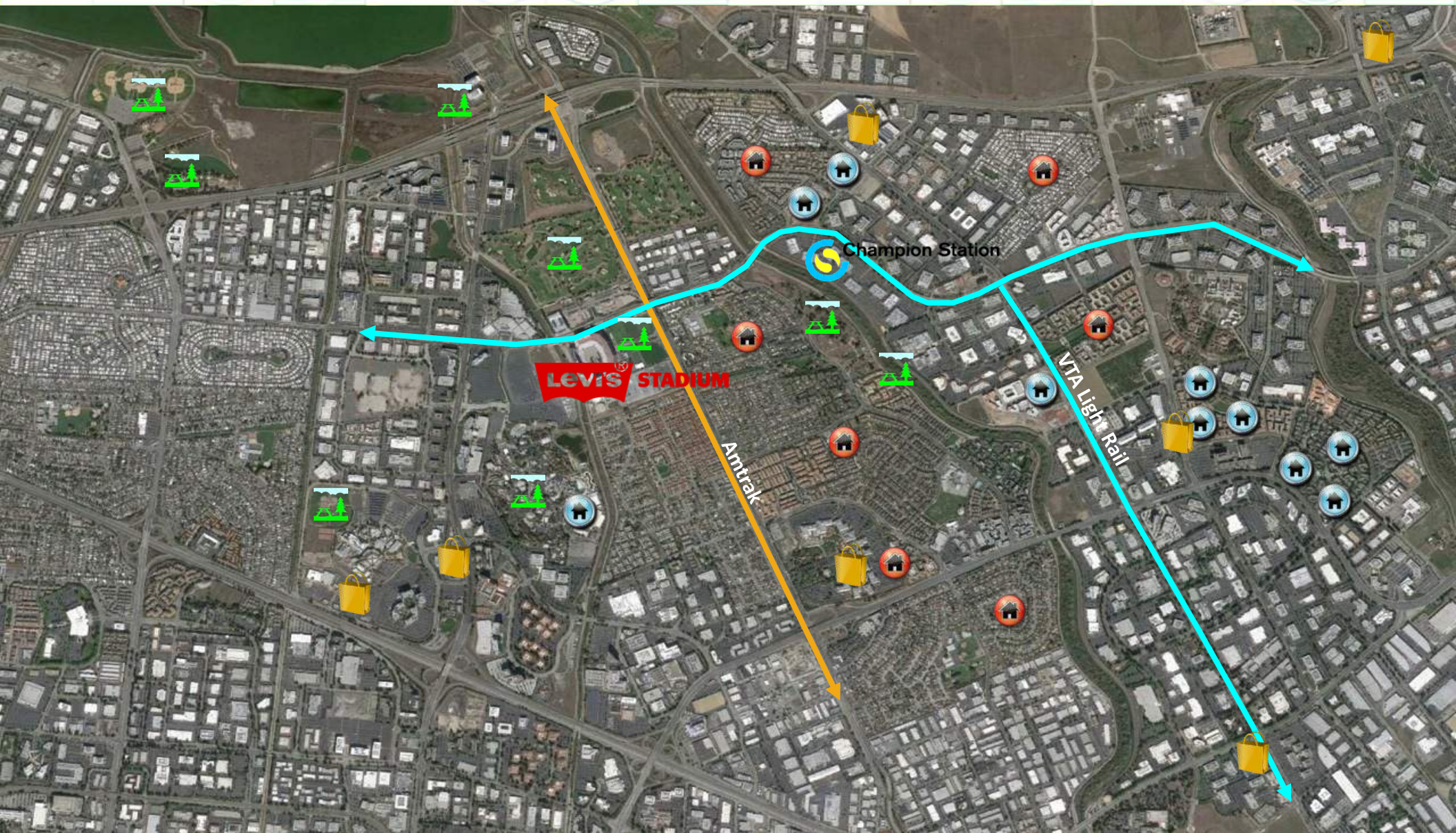
Silicon Valley



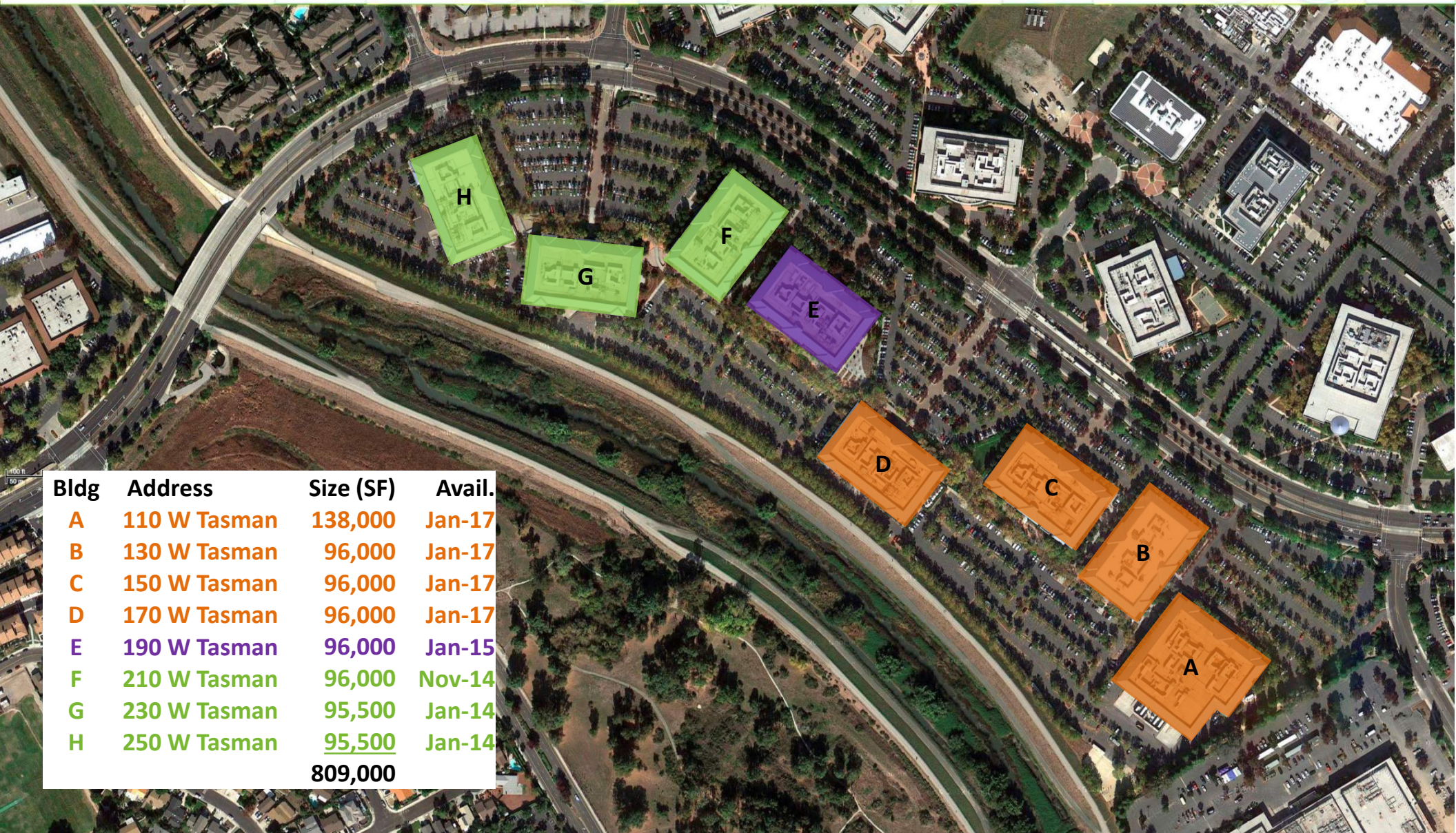
Neighborhood



Neighborhood



Campus Availability



Bldg	Address	Size (SF)	Avail.
A	110 W Tasman	138,000	Jan-17
B	130 W Tasman	96,000	Jan-17
C	150 W Tasman	96,000	Jan-17
D	170 W Tasman	96,000	Jan-17
E	190 W Tasman	96,000	Jan-15
F	210 W Tasman	96,000	Nov-14
G	230 W Tasman	95,500	Jan-14
H	250 W Tasman	95,500	Jan-14
		809,000	

Timeline.

- 1992-1995- Construction of 810,000 SF campus serving as Cisco Systems Corporate HQ
- 2006-2012- Cisco workforce reductions and densification
- 2012- Cisco hires JLL to market campus.
 - Four rounds of bidding
 - 7 bidders
 - Brutally competitive
- September 2013- TMG acquires Site A for \$159,000,000
- January 2014- Cisco vacates 230 and 250 West Tasman
- March 2014- TMG begins rebranding and remodeling 210-250 West Tasman
- June 2014- Broker Open house
- Currently marketing 190-250 West Tasman to single/multiple building users