



Market Research Report

Citywide Ultra High-Speed Broadband System Project

1 June 2011



Tellus Venture
Associates

- Analysis of potential fiber network extensions
 - Research methodology
 - Mapping data
- Cost-benefit analysis and ROI for extensions
- Pricing analysis
- Assess “value-added” commercial telecom services (“lit” services)
- Assessment of consumer FTTP market

Scope of work

Market research report

- High market share, brand awareness within niche
 - Except for resellers, no other telecommunications service providers offer intra-city dark fiber services in Palo Alto
- Core competency
 - Reliable, inexpensive basic connectivity
- Market effectiveness
 - Excellent coverage in Stanford Research Park, downtown
- Gaps in commercial coverage
 - Hard to reach businesses located at edge of network (5 areas)
 - Mobile telephone carriers (“backhaul” service)
 - Potential Solutions

Findings






Market research report

- Low level, targeted marketing will maintain market position and customer acquisition efforts
- Consider extending network to hard to reach business clusters (5 areas)
 - Based on ROI and/or economic development potential
- Mobile carriers, multi-tenant office buildings are growth opportunities
- Provisioning commercial lit services is not recommended. Don't compete with resellers
- Evaluate flat rate pricing
- Evaluate “Fiber-to-the-Basement” for multi-tenant office buildings
- No current business case for residential FTTP service

Recommendations

Market research report

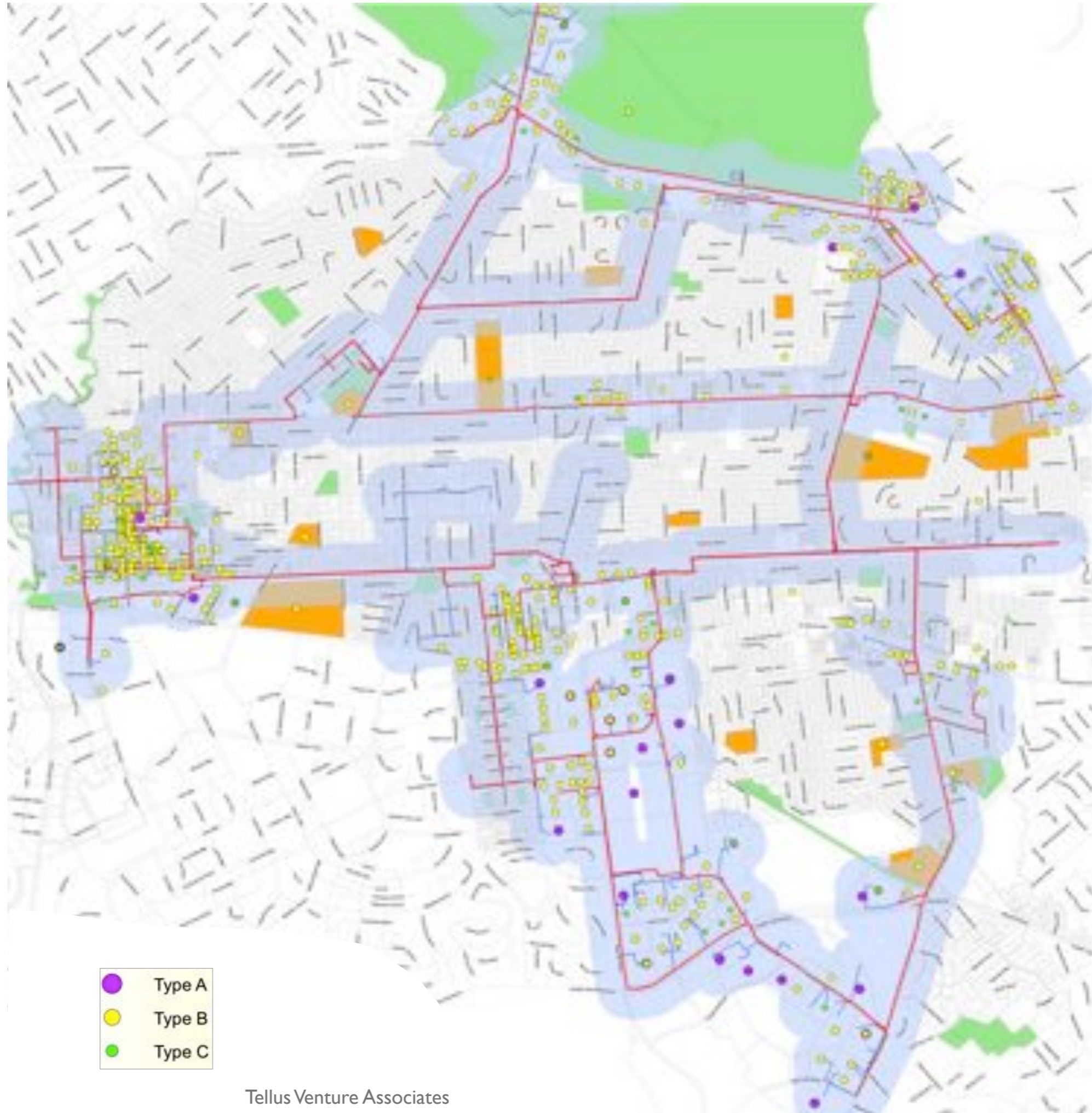
CPAU Commercial Electric Accounts

Customer Electric Account Profile	Number of Accounts	Mapping Type
Large commercial	41	A 
Medium commercial	728	B 
Small commercial greater than \$20,000	73	C 
Small commercial greater than \$10,000	204	D 
Small commercial	3,224	E 

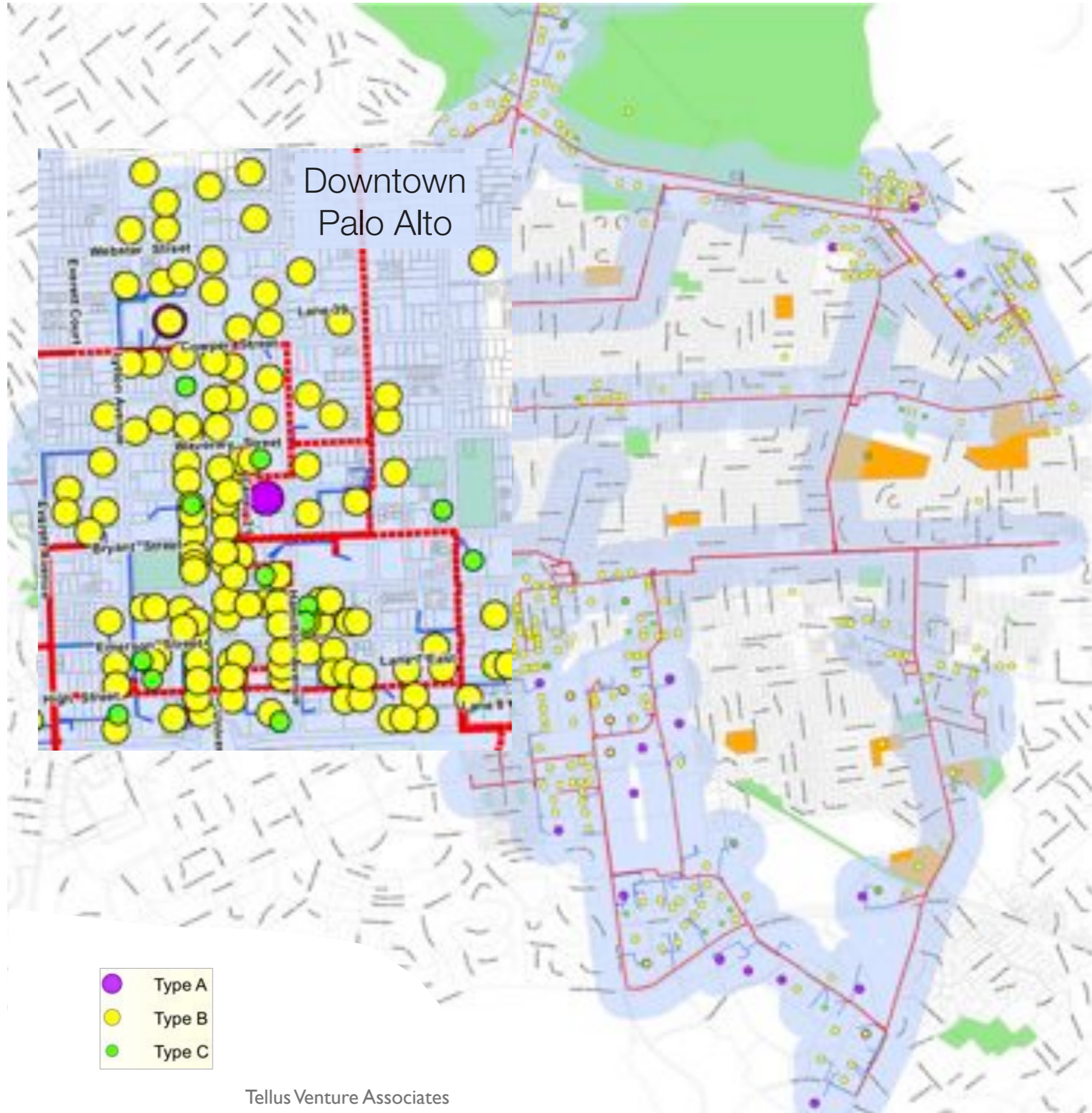
Commercial electric accounts were sorted by rate and annual billing

Types A, B & C matched profile of current CPAU fiber customers

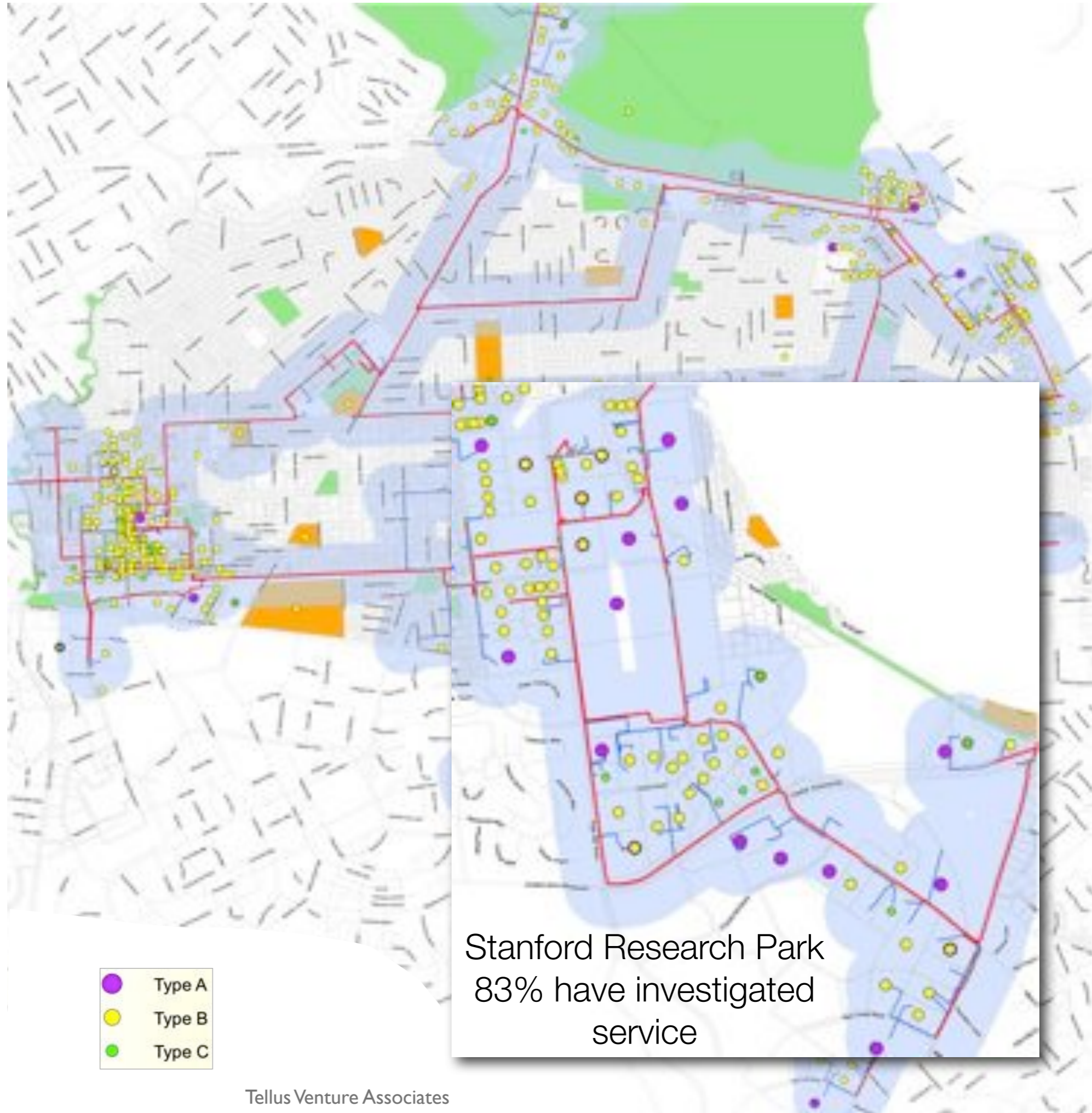
CPAU fiber network within reach of hundreds of businesses, downtown & Stanford Research Park completely covered.



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CPAU Commercial Electric Accounts

Distance from existing CPAU fiber network:

Commercial Account Type	Within 50 meters or less	Within 100 meters or less	Within 200 meters or less	Greater than 200 meters (Types A, B, C)	Greater than 200 meters (all Types)
A	34	34	35	3	3
B	509	577	619	72	72
C	53	57	61	10	10
D					14
E					479
Total	596	668	715	85	578

Businesses along current network

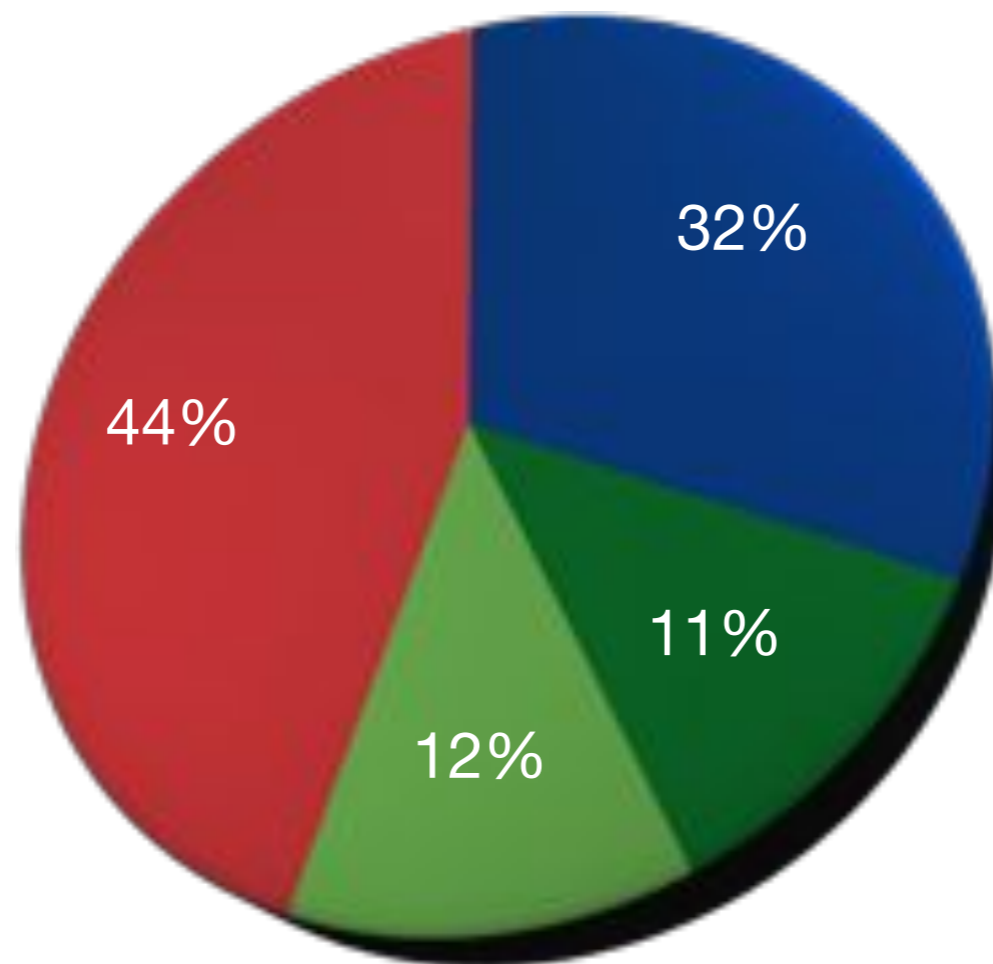
Most are within 50 meters

CPAU Fiber Awareness & Opportunity by Percentage

Geographic Group	Electricity Usage Profile Matches	CPAU Fiber Database Matches	Technology, Medical & Professional	Commercial Property Company	Retail or Other Non-Prospect
Stanford Research Park	145	83%	9%	3%	5%
Downtown Palo Alto	177	22%	11%	14%	53%
Other Type A, B, C within 200 meters of network	395	18%	12%	15%	55%
Total	717	32%	11%	12%	44%

Several dozen potential fiber customers were identified

More than ¾ths have investigated service or aren't prospects



- Fiber DB
- Tech, Med, Professional
- Commercial Property
- Retail

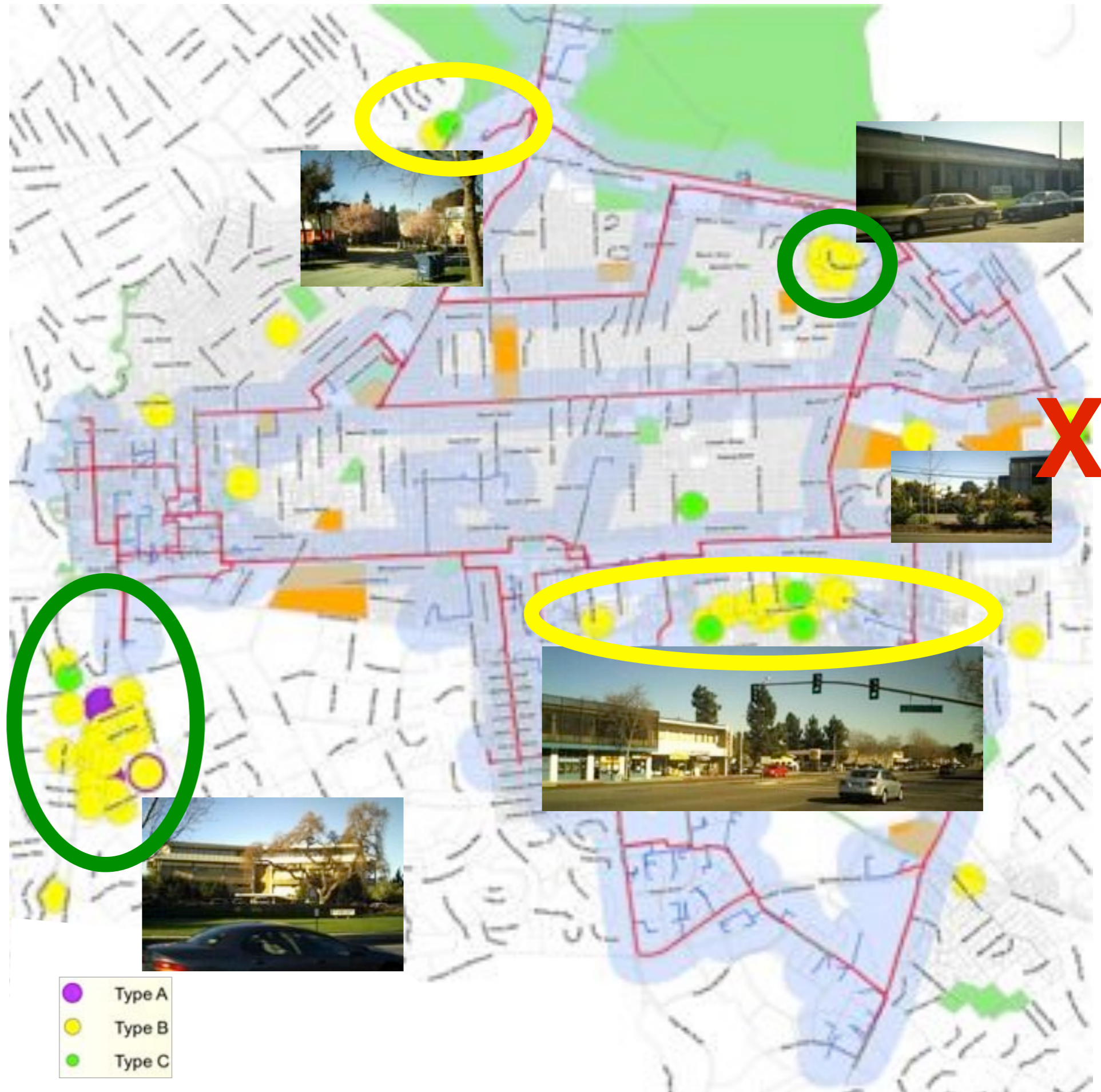
Several dozen potential fiber customers were identified

More than $\frac{3}{4}$ ths have investigated service or aren't prospects

Mapping also showed clusters of large commercial accounts more than 200 meters from network.



Site surveys,
interviews,
secondary
research fed
into cost/
benefit analysis



Cost Estimate of Network Extensions (000s)

Fiber segment	Length (miles)	Low cost (\$30/foot)	High cost (\$60/foot)
1 - El Camino Real	2.5	\$393	\$785
2 - Sand Hill/Welch	2.6	\$407	\$814
3 - San Antonio	0.7	\$111	\$222
4 - East Meadow Circle	0.7	\$115	\$231
5 - East Bayshore	0.3	\$44	\$87
Total	6.8	\$1,069	\$2,139

Prospects Identified for Further Investigation

Fiber Segment	Locations
1 - El Camino Real	20
2 - Sand Hill/Welch	15
3 - San Antonio	1
4 - East Meadow Circle	12
5 - East Bayshore	4
Total	52

Cost & reach of extensions

204 Type A, B, C within reach,
not all are prospects

Cost/Benefit Comparison - Low Cost Scenario (000s)

Fiber segment	NPV 3 Years	NPV 5 Years	NPV 10 Years
1 - El Camino Real	-\$237	-\$155	\$19
2 - Sand Hill/Welch	-\$354	-\$330	-\$278
3 - San Antonio	-\$111	-\$111	-\$111
4 - East Meadow Cir.	-\$11	\$43	\$159
5 - East Bayshore	\$8	\$36	\$93
Total	-\$704	-\$516	-\$118

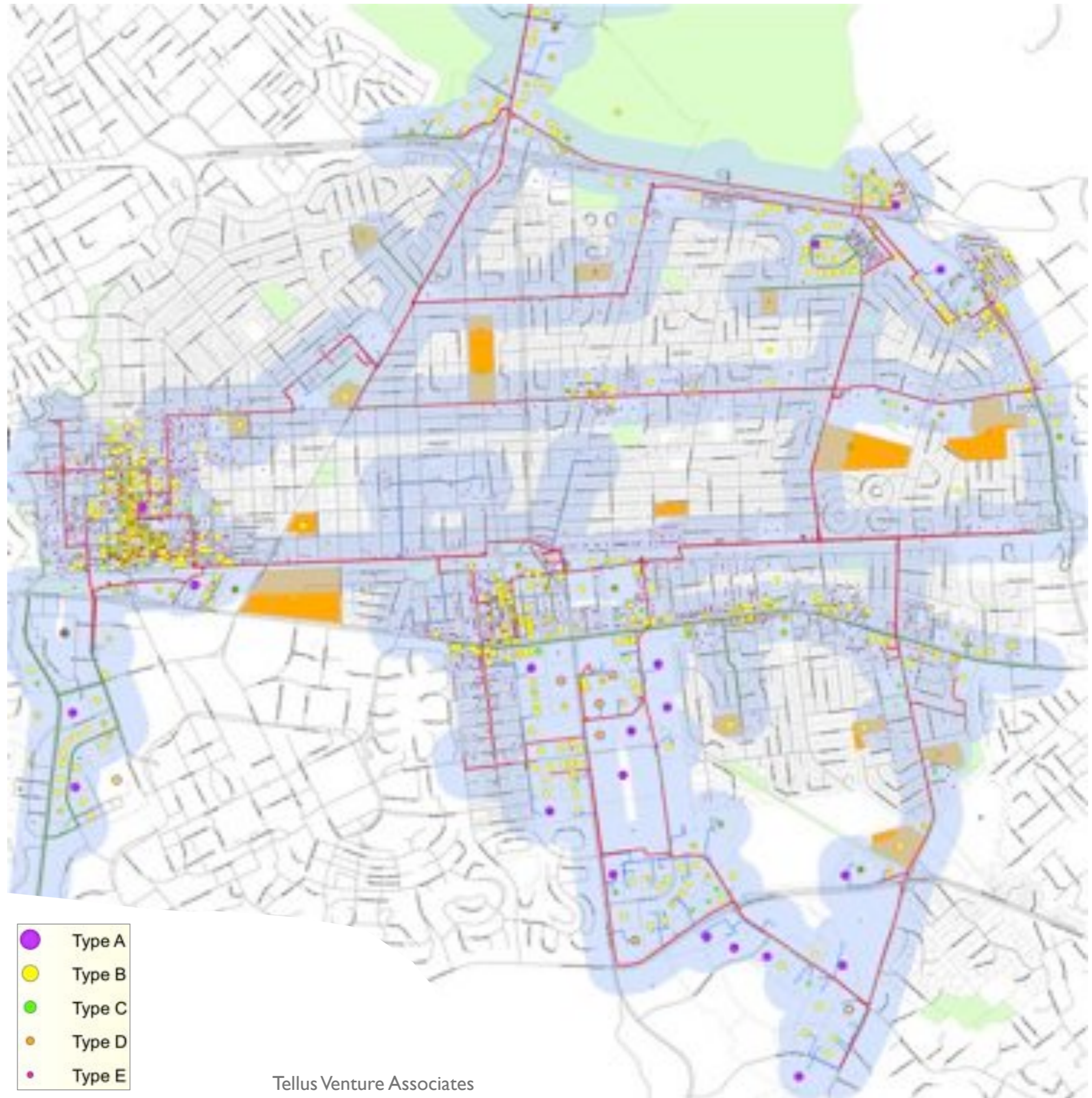
Cost/Benefit Comparison - High Cost Scenario (000s)

Fiber segment	NPV 3 Years	NPV 5 Years	NPV 10 Years
1 - El Camino Real	-\$629	-\$547	-\$374
2 - Sand Hill/Welch	-\$761	-\$736	-\$685
3 - San Antonio	-\$222	-\$222	-\$222
4 - East Meadow Cir.	-\$127	-\$72	\$44
5 - East Bayshore	-\$35	-\$8	\$50
Total	-\$1,774	-\$1,585	-\$1,187

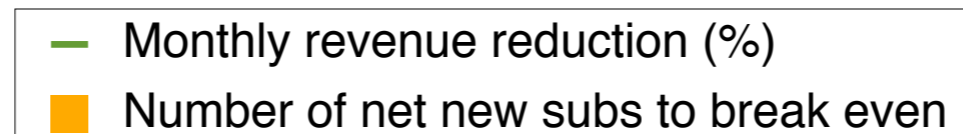
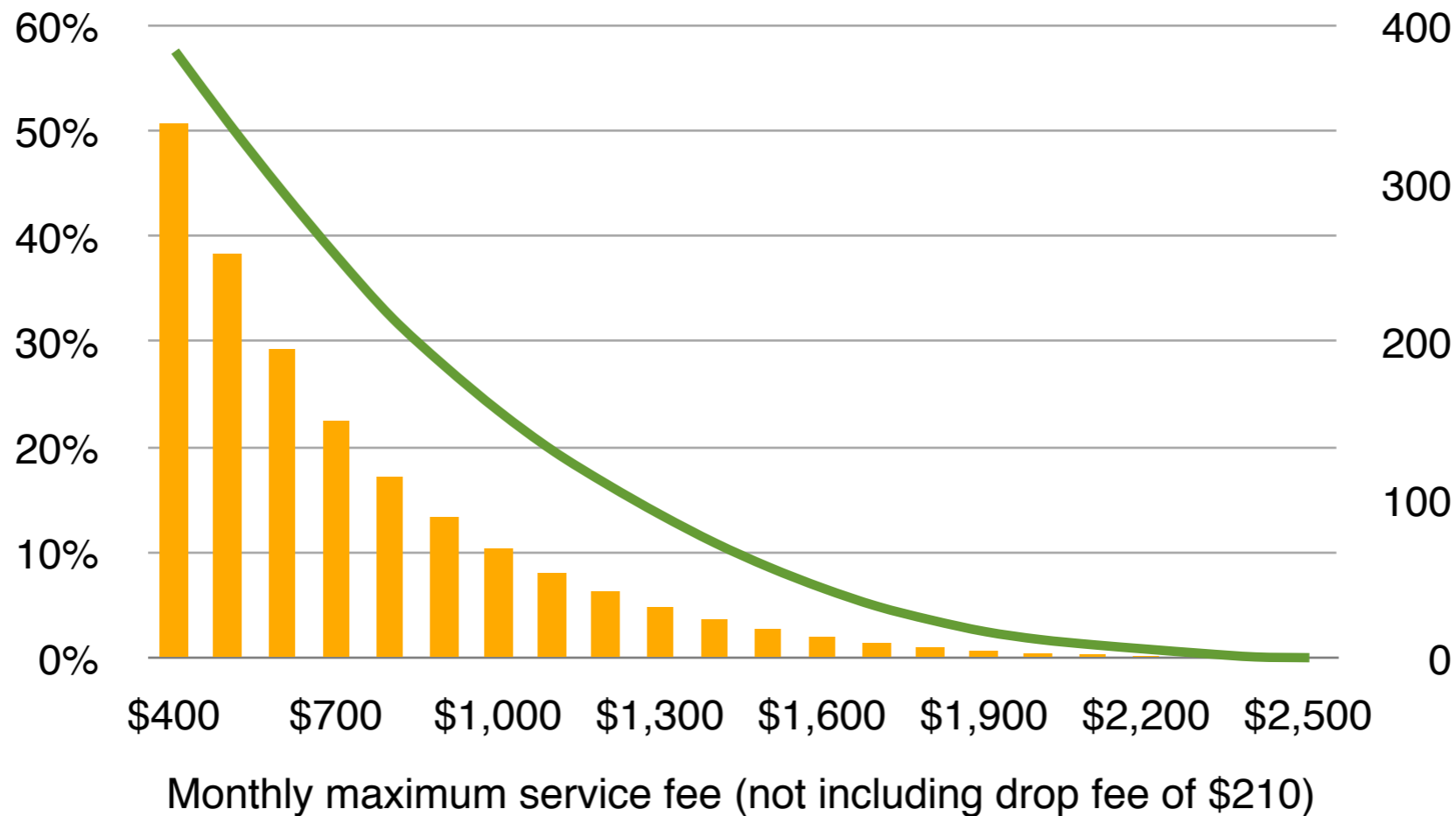
Cost/benefit analysis of extensions

Welch Road would be a “go”
with shorter network, pre-sales

Mobile carriers, commercial properties could be addressed by pricing programs



Effect of Flat Rate Monthly Service Pricing

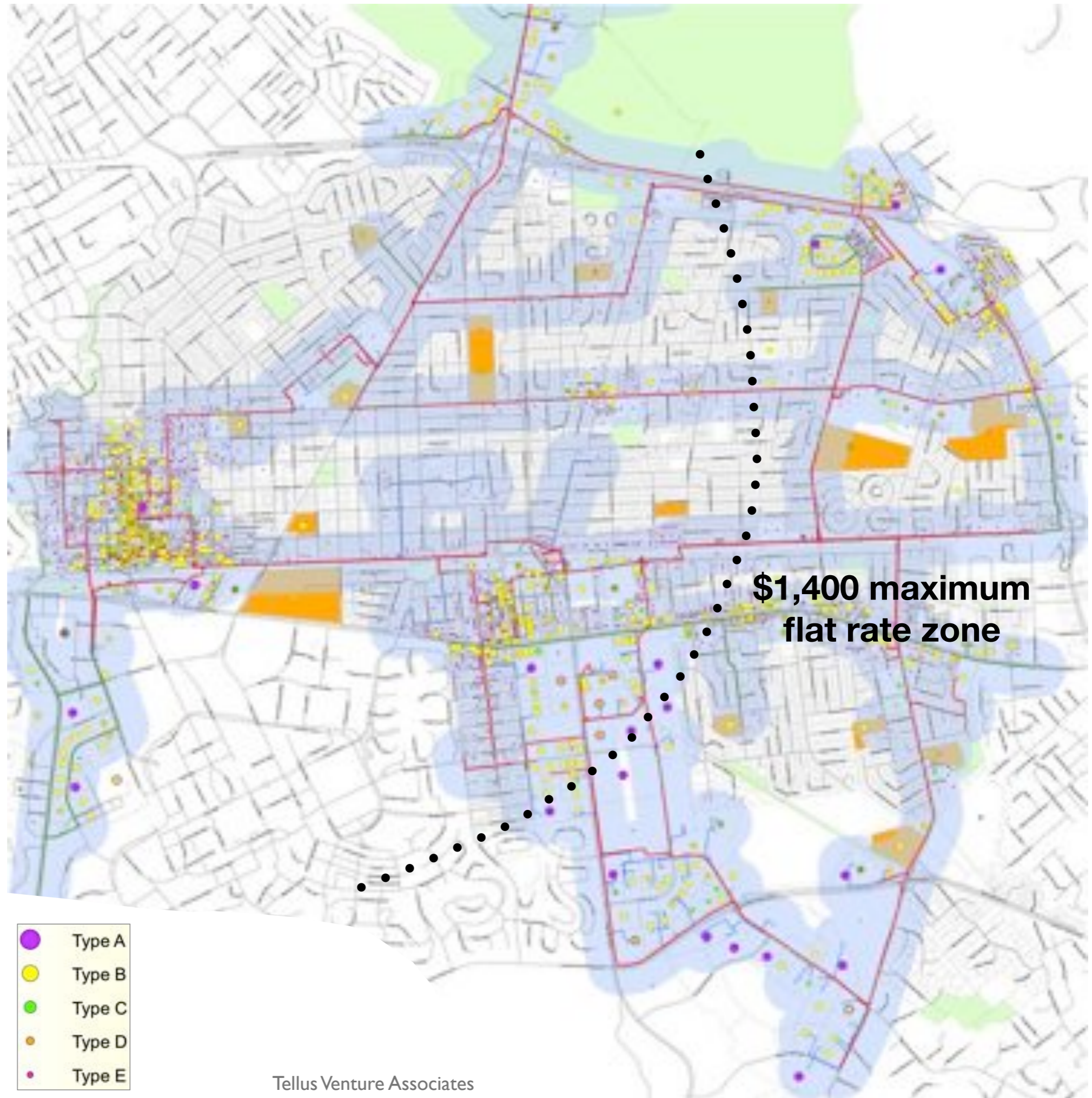


Monthly maximum service fee	\$800	\$1,000	\$1,200	\$1,400	\$1,600	\$1,800	\$2,000
Monthly revenue reduction (%)	32%	23%	16%	11%	7%	4%	2%
New subs to break even	115	69	42	24	13	6	3

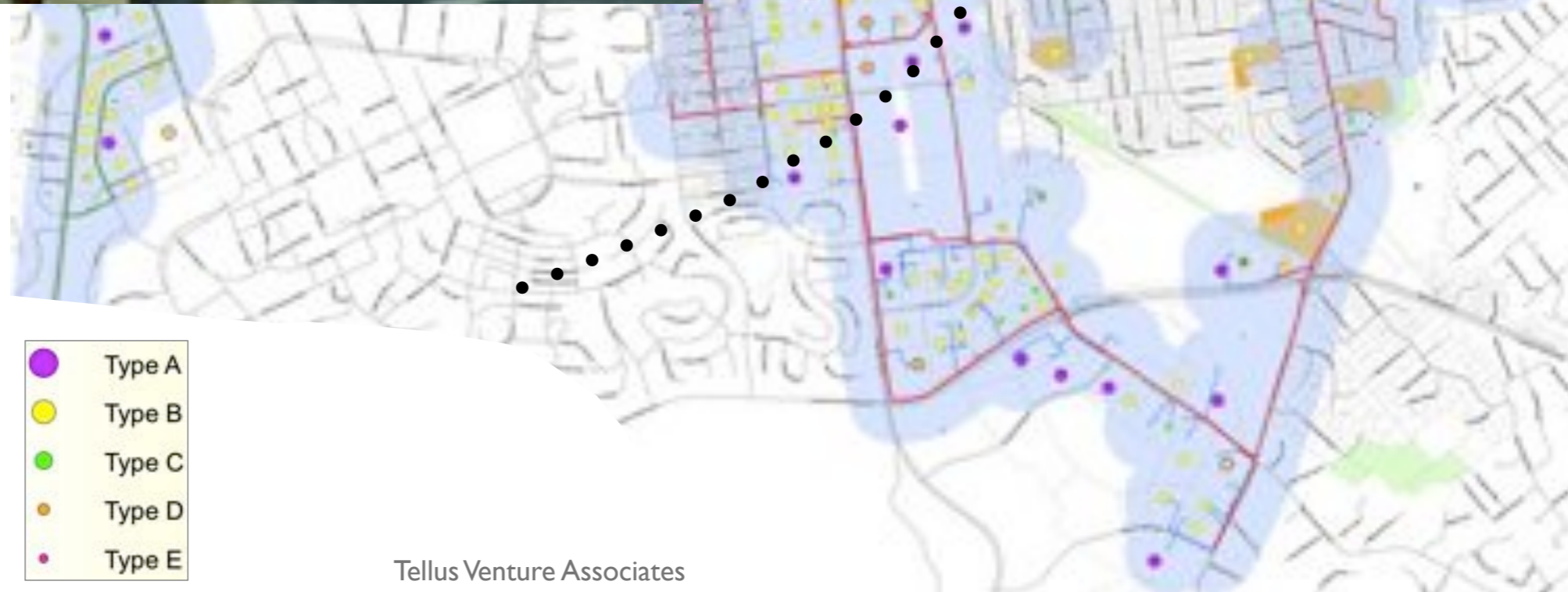
\$1,400 max monthly service fee would reduce current revenue 11%

Combined with standard \$210 drop fee, total would be \$1,610

Mobile carriers, commercial properties could be addressed by pricing programs



Mobile carriers, commercial properties could be addressed by pricing programs



Effect of Increasing CPAU Monthly Drop Fee

	+\$100	+\$200
NPV 1 year	\$1,143	\$2,286
NPV 2 years	\$2,231	\$4,463
NPV 3 years	\$3,268	\$6,536
NPV 4 years	\$4,255	\$8,510
NPV 5 years	\$5,195	\$10,391
NPV 6 years	\$6,091	\$12,182
NPV 7 years	\$6,944	\$13,887
NPV 8 years	\$7,756	\$15,512
NPV 8 years	\$8,529	\$17,059
NPV 10 years	\$9,266	\$18,532
Years to payback	7.8	3.5

Discount rate: 5%

Average CPAU Fiber Customer Lifetime

	Years
All customers	4.1
Active customers	5.8
Disconnected customers	2.0

Increasing drop fee by \$200 pays back average install cost in 3.5 years

Within lifespan of average CPAU fiber customers

“Fiber to the Basement” – Private Sector Provider Model

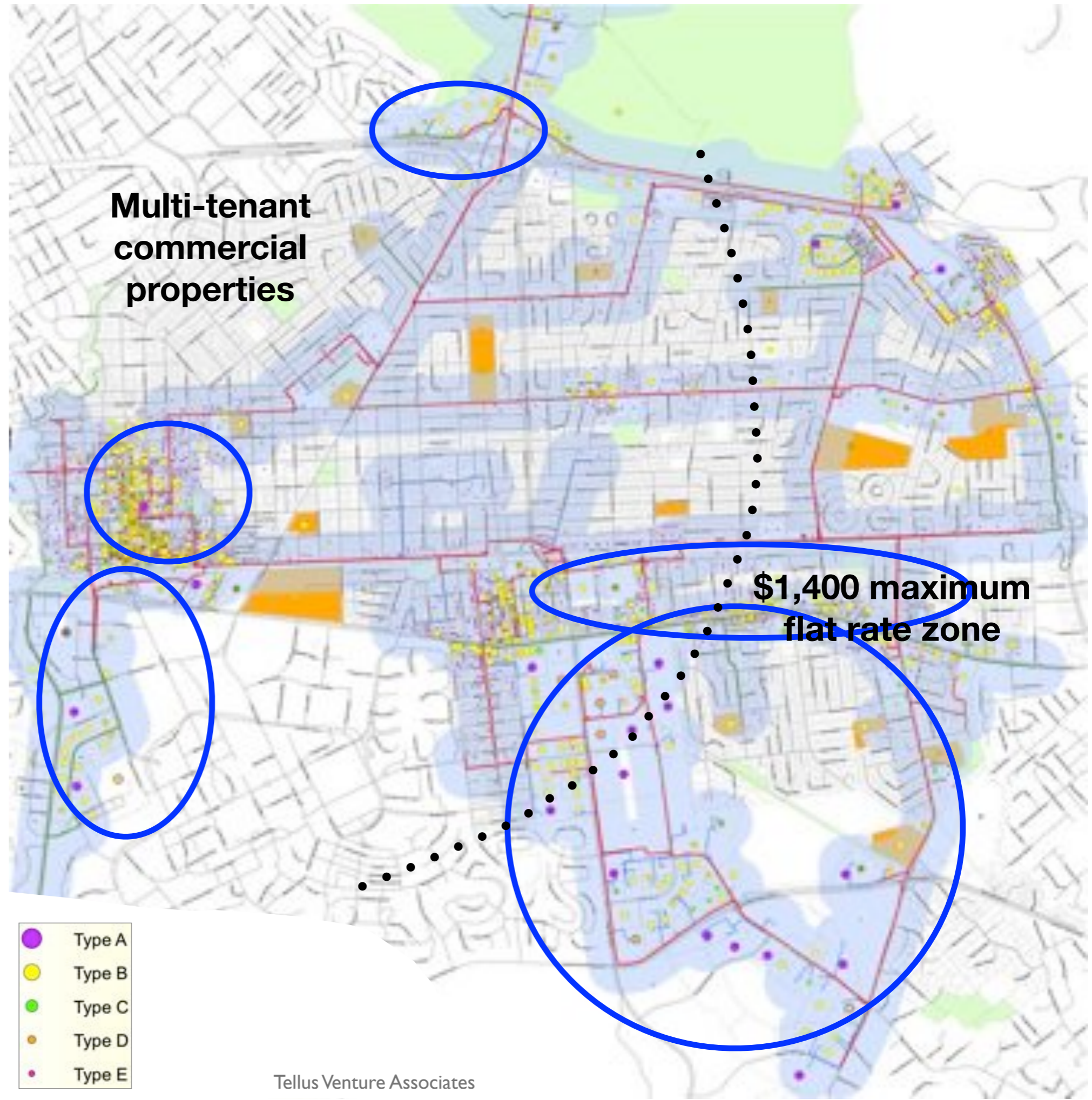
Monthly Fee	\$5,000 Capex				\$20,000 Capex			
	\$300	\$500	\$700	\$1,000	\$300	\$500	\$700	\$1,000
NPV 5 years	\$8,643	\$15,466	\$20,015	\$45,035	\$31,388	\$35,937	\$49,583	\$45,035
Years to payback	2.6	1.4	1.0	0.5	2.9	2.5	1.8	1.9
Subscribing tenants	12	7	5	4	14	8	6	5

Discount rate: 10%

Fiber to the basement model adds value on cash flow alone

Private network could be run by owners or third party

Mobile carriers, commercial properties could be addressed by pricing programs



Competitive position



Market attractiveness

Mixed results for overbuilders

No cash cows, few stars, lots of dogs and question marks



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