Mountain View
Whisman
School District

CBRS Proposal

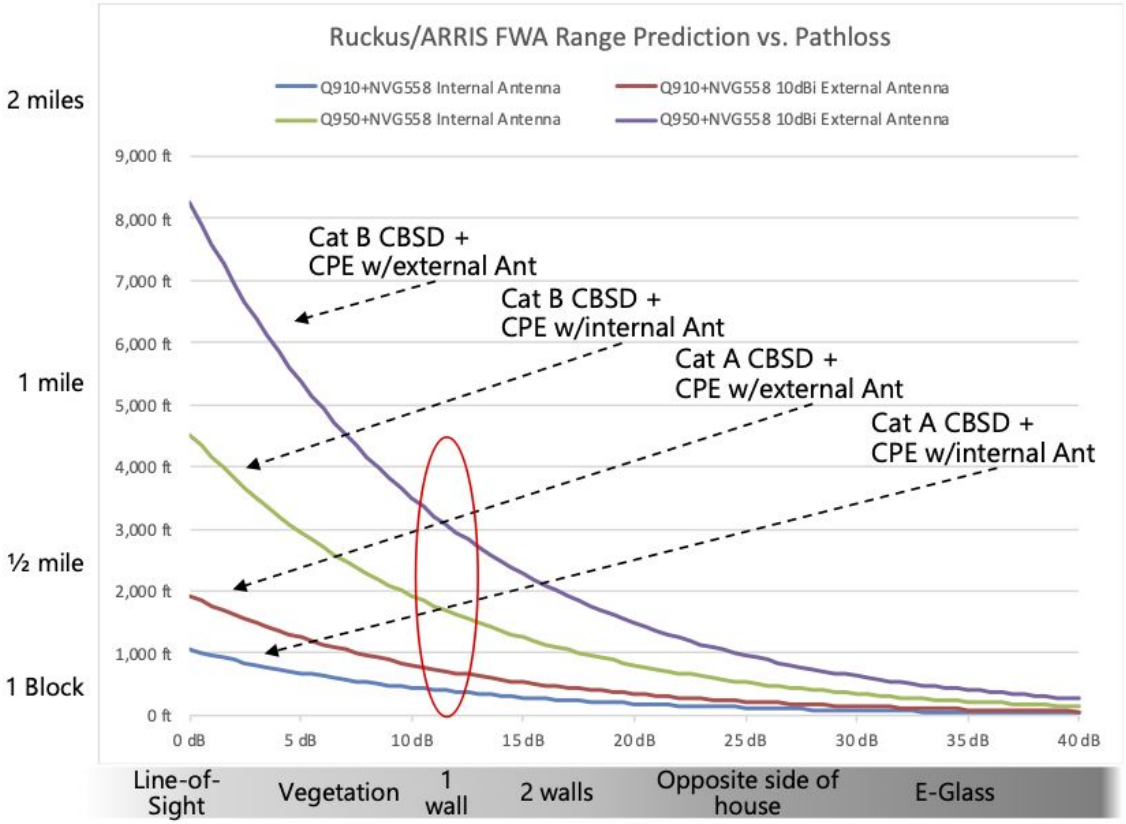
Mountain View
Whisman
School District

What is CBRS?

Citizens Broadband Radio Service

- Utilizes 150Mhz wide band of the 3.5Ghz
- Allows for creation of private LTE networks
  - No need to acquire spectrum licenses
- Benefits over traditional wifi
  - Longer range
  - Reduced power usage
  - Operates outside of wifi spectrum

CBRS Delivers Significant Range



Factors impacting range:

- Obstructions – foliage, walls, …
- Antenna height
- Number of channels
- Uplink power (user equipment
- Desired performance

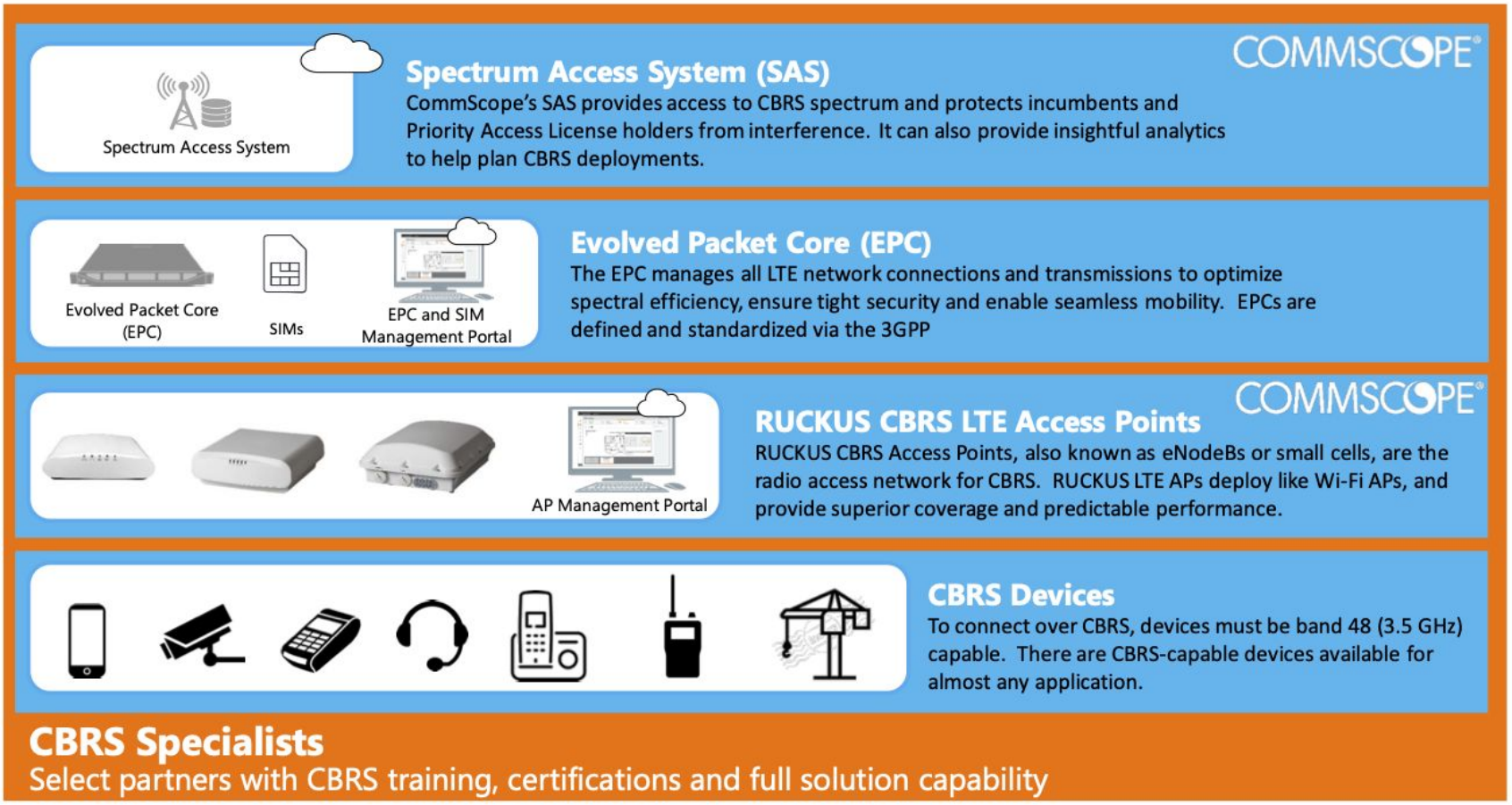
➡ Range is highly dependent on deployment environment!

Assumptions: 25Mbps DL/3 Mbps UL target rate using 2 CBRS channels (50/5 with 4 CBRS channels), empirical outdoor propagation model based on 3.5GHz field measurements, 3m base station height, 2dB fade margin. Actual coverage and range will vary according to actual RF conditions.

Mountain View
Whisman
School District

What does a deployment look like?

Building Blocks of CBRS

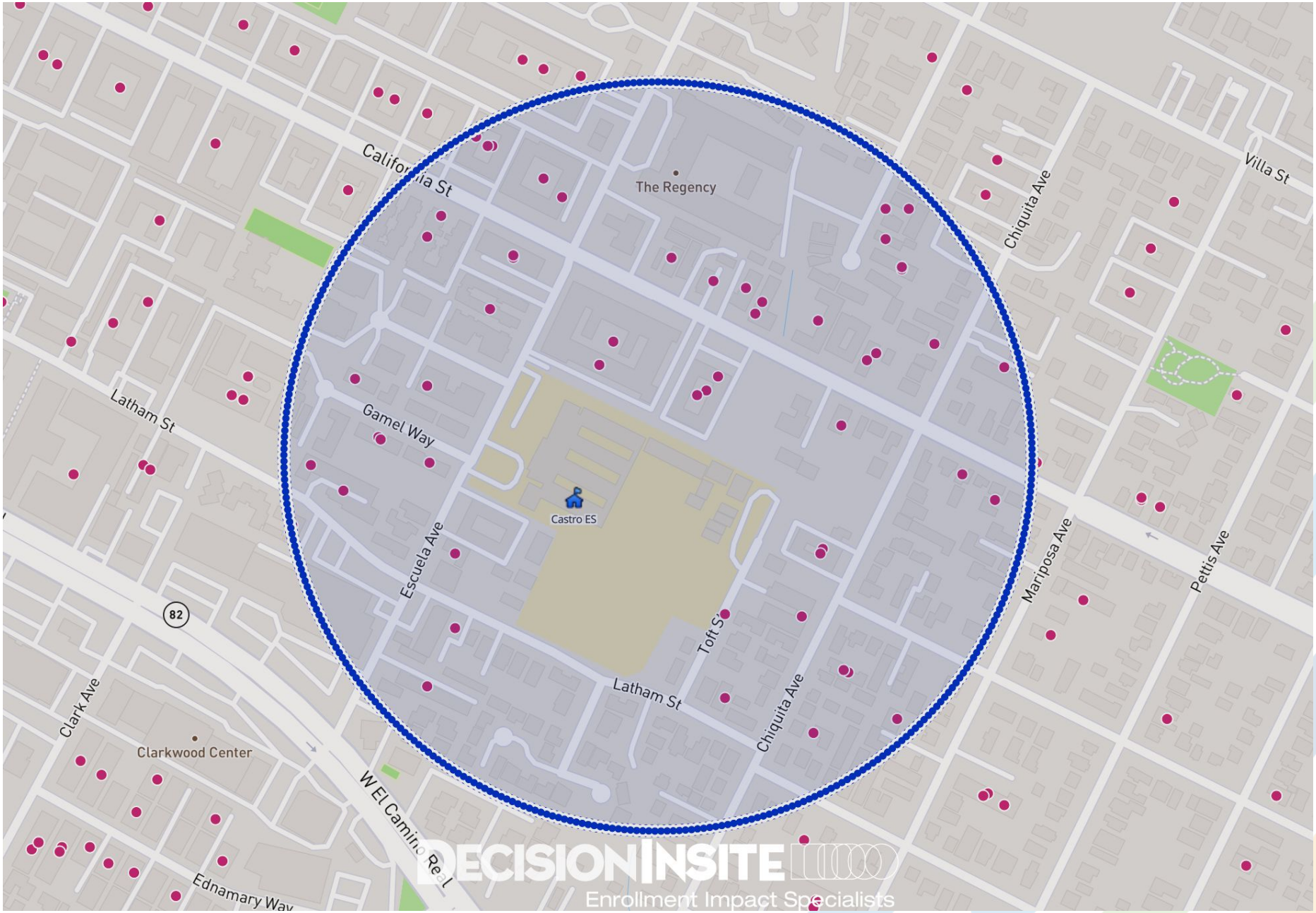


Example - Castro/Mistral

2 -3 Ruckus Q910 Access Points

2 EPC routers

CBRS band 48 client USB modems


The Regency
Villa St
Chiquita Ave
Latham St
Gamel Way
Castro ES
Escuela Ave
Mariposa Ave
Pettis Ave
82
Clark Ave
Clarkwood Center
Toft St
Latham St
Chiquita Ave
Ednamary Way
DECISION INSITE
Enrollment Impact Specialists

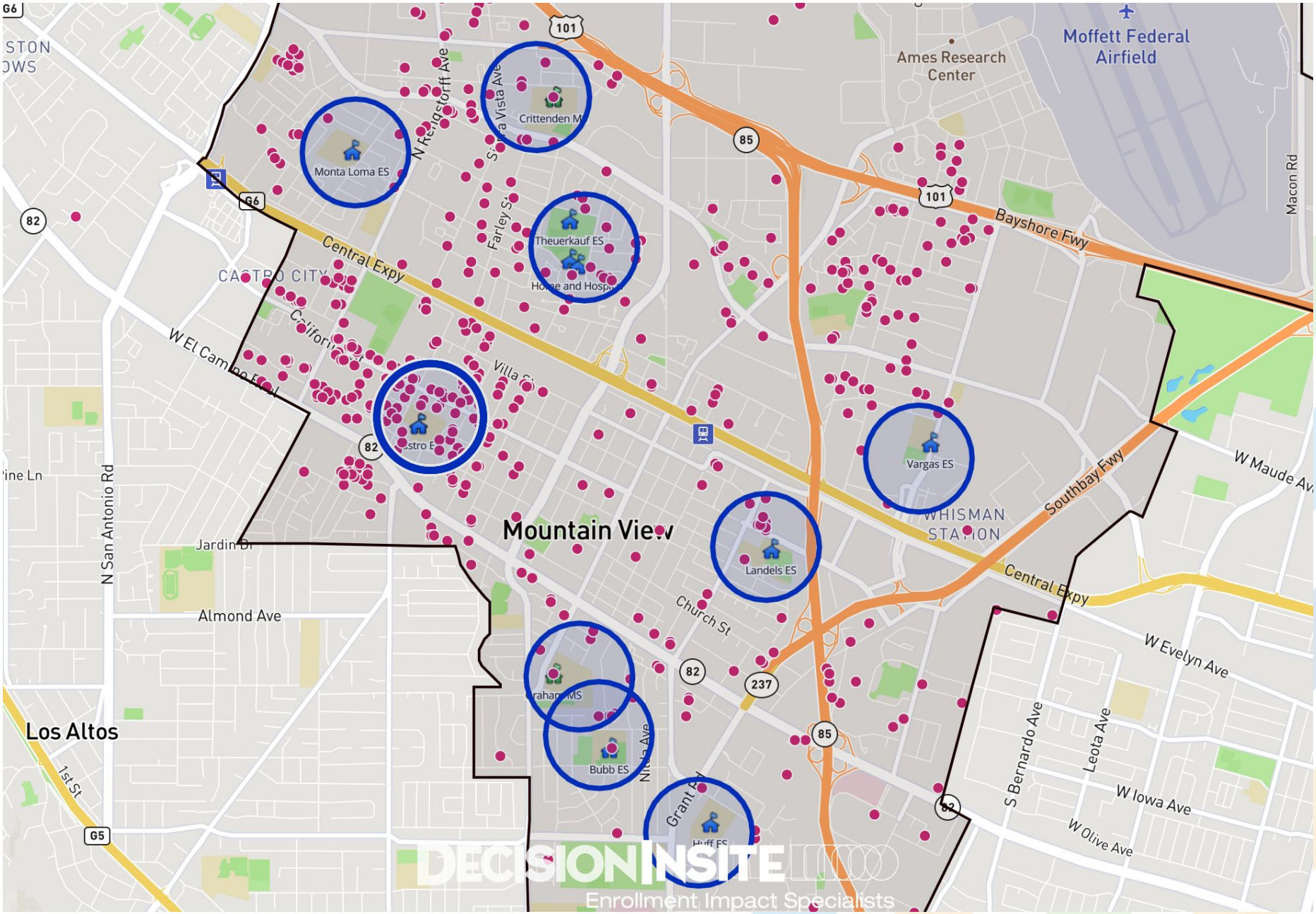
Mountain View
Whisman
School District

District-wide deployment

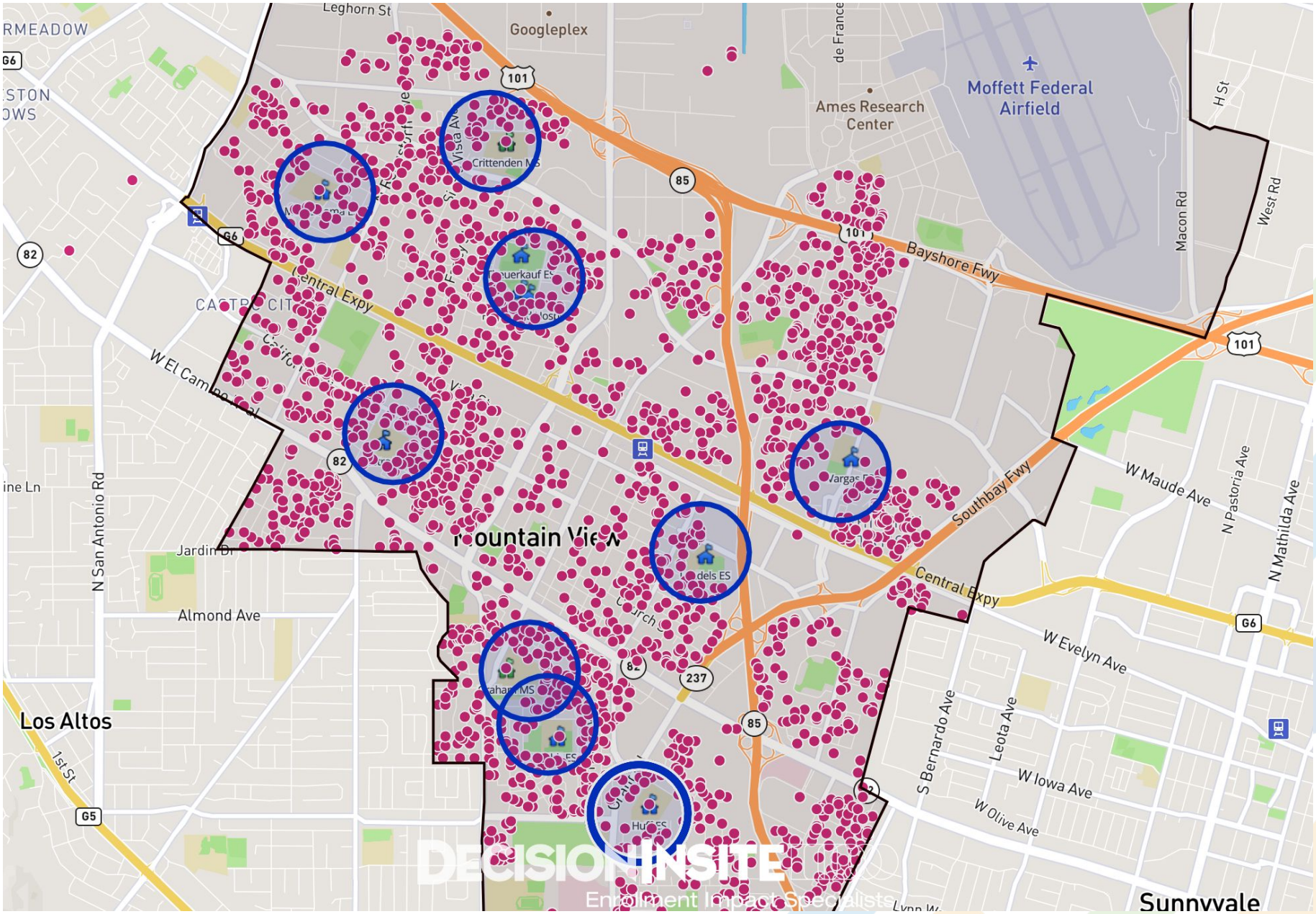
Deploying at all sites

- Every site with at least one AP
  - CA/MI and DO/TH/ST with 2-3
- 300 client USB modems
- Installation costs

Coverage of SED students



Coverage of all students



Sample USD Private LTE Proposal

Input Numbers Below	
14	# of Ruckus Q910 Infastructure APs
300	# of Multi-Tech USB Client Premises Devices (connects directly to laptop)
0	# of Multi-Tech OnGo gateways (connects via ethernet to laptop or home wifi router)
3	How many years of CPE Sim support?

Private LTE Costs with 3 years of support and licensing		
Total Cost HW/SW/Licensing		$ 198,372.00
Total Cost CPI services physical installation		$ 75,600.00
Grand Total		**$ 273,972.00**
Total Recurring Fees (included in Total Cost)	$ 19,186.00	

Recurring Fees = 3 year AP support, and 3 years of sim support

Competitive Pricing vs. T-Mobile Education Promotion MiFi and Meraki Citywide WiFi

Estimated MiFi costs for 3 years of support and licensing	
Total Cost HW/SW/Licensing (No cost)	$ -
Total Cost (Based on T-Mobile education pricing of $20 unlimited per line)	$ 216,000.00
Grand Total	**$ 216,000.00**

All Fees are recurring

Estimated WiFi costs for 410 Access Points (Estimated AP count for 2 square miles of City Wide WiFi Coverage)		
Total Cost Onsite Survey		$ 988,389.00
Wireless LAN Deployment		$ 121,005.00
Cabling and Physical Installation		$ 549,400.00
Access Points and Licensing for 3 years (120 APs)		$ 856,490.00
Grand Total		**$ 2,515,284.00**
Total Recurring Fees (included in Total Cost)	$ 83,230.00	

Recurring fees are based on 3 years of AP cloud management

Mountain View
Whisman
School District

Next Steps

Next Steps

- Work with vendor to create more accurate coverage maps
- Validate viability of unused fiber for city and Whisman
- Category B equipment available in the Spring