



Fast broadband is more essential than ever before.

Getting high-speed connections where they're needed is hard. **Tarana and PCS Tech** are making it easier.

The problem

- Large portions of our communities remain underserved in a connected world where the need for real broadband is more essential than ever.
- Copper-based fixed access networks are increasingly exhausted.
- Efforts to improve supply with fiber have been throttled by prohibitively high costs and installation complications.
- Wireless alternatives continue to fail in the face of the significant technical challenges in fiber class fixed access, including pervasive obstructions, spectrum scarcity, interference, changing conditions, and unworkable deployment models.

The solution

Tarana innovation has solved all these problems. Tarana's Gigabit 1 platform (G1) is powered by the results of more than ten years of focused R&D, and crafted from its custom silicon up to its cloud-based service automation with a completely fresh approach to fixed wireless. Extensively validated by tier-1 operators and well proven in mass-scale networks, these fundamental advances in multi-radio performance completely transform the economics of delivering gigabit-class access.

Fiber quality Free, unlicensed spectrum At massive scale



PCS Technologies Inc. is an industry leading systems integration and engineering firm, serving the network connectivity needs of communities by designing, building, and maintaining broadband networks across the United States for more than 25 years.



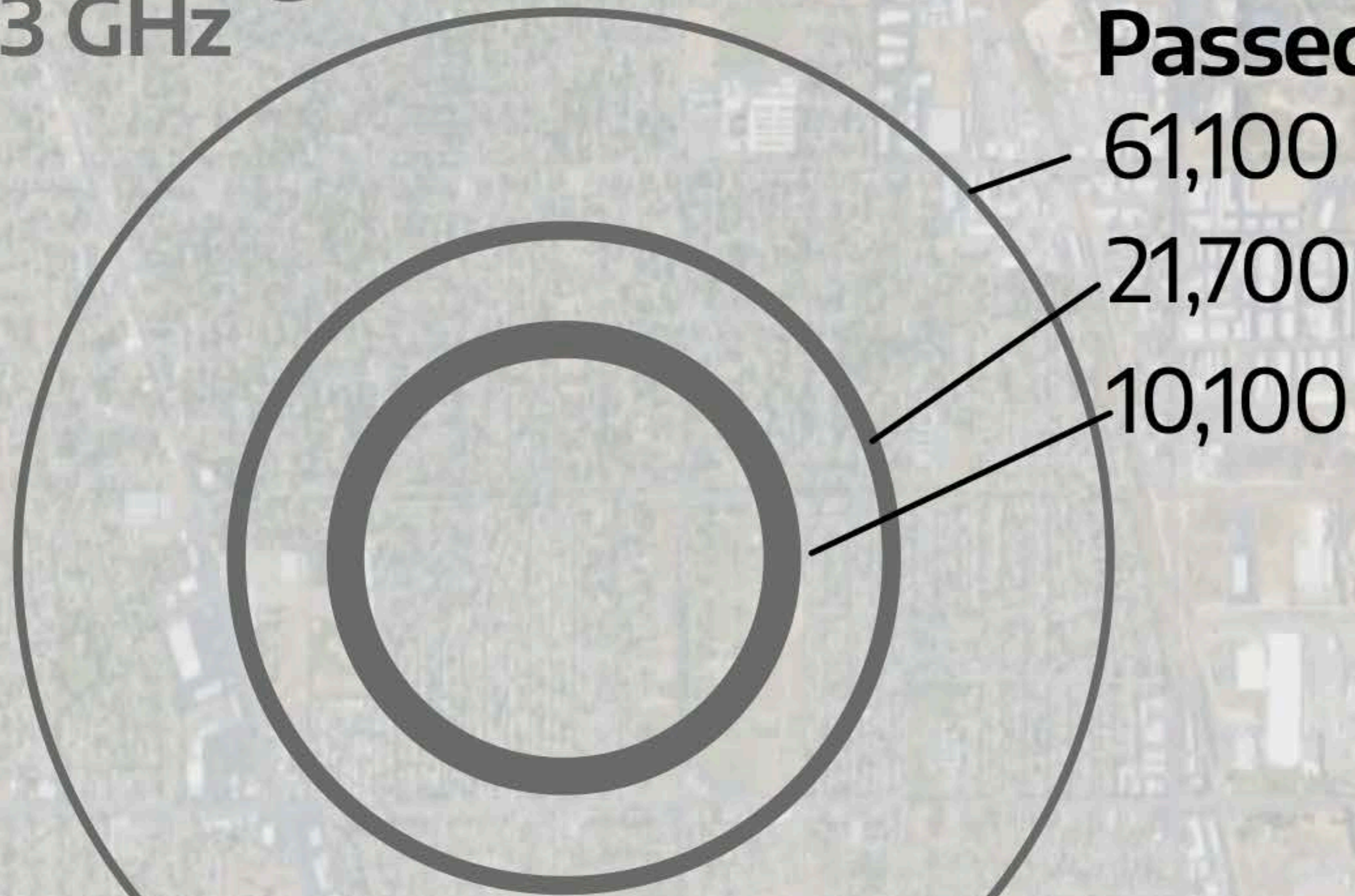
Tarana Wireless, Inc. is the industry's performance leader and new category creator in ngFWA (next-generation fixed wireless access), powered by a number of well-proven breakthroughs in perfect, multidimensional optimization of radio signals. Our G1 access platform overcomes previously insurmountable network economics challenges for service providers in every market.

Residential Coverage

Sacramento, California Metro Area Example

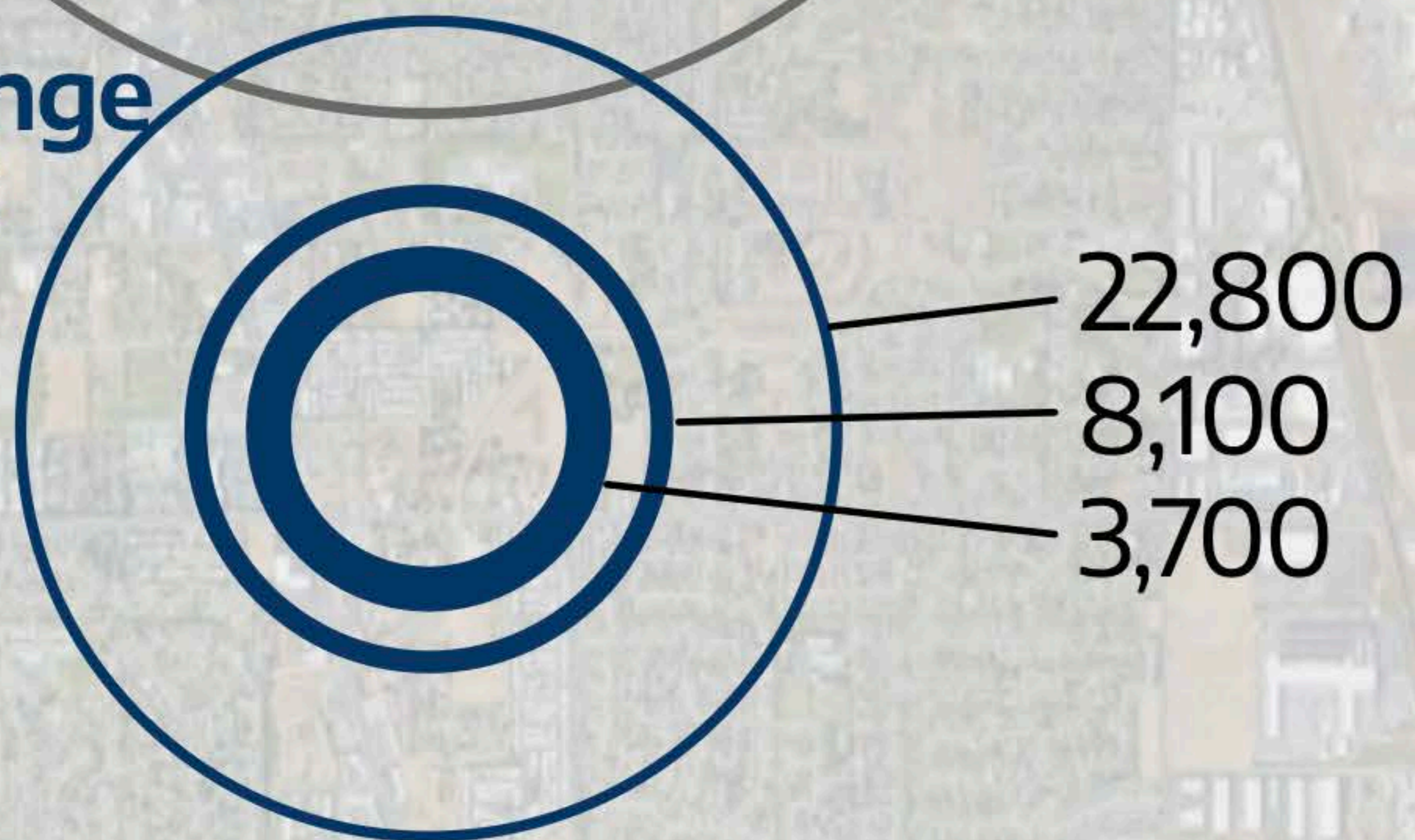
G1 Range
3 GHz

Households Passed



61,100
21,700
10,100

G1 Range
5 GHz



22,800
8,100
3,700

5G mm-wave
28 GHz
(for reference)

○ ————— 68

Cell-Edge Mbps

■ 800
■ 500
— 200

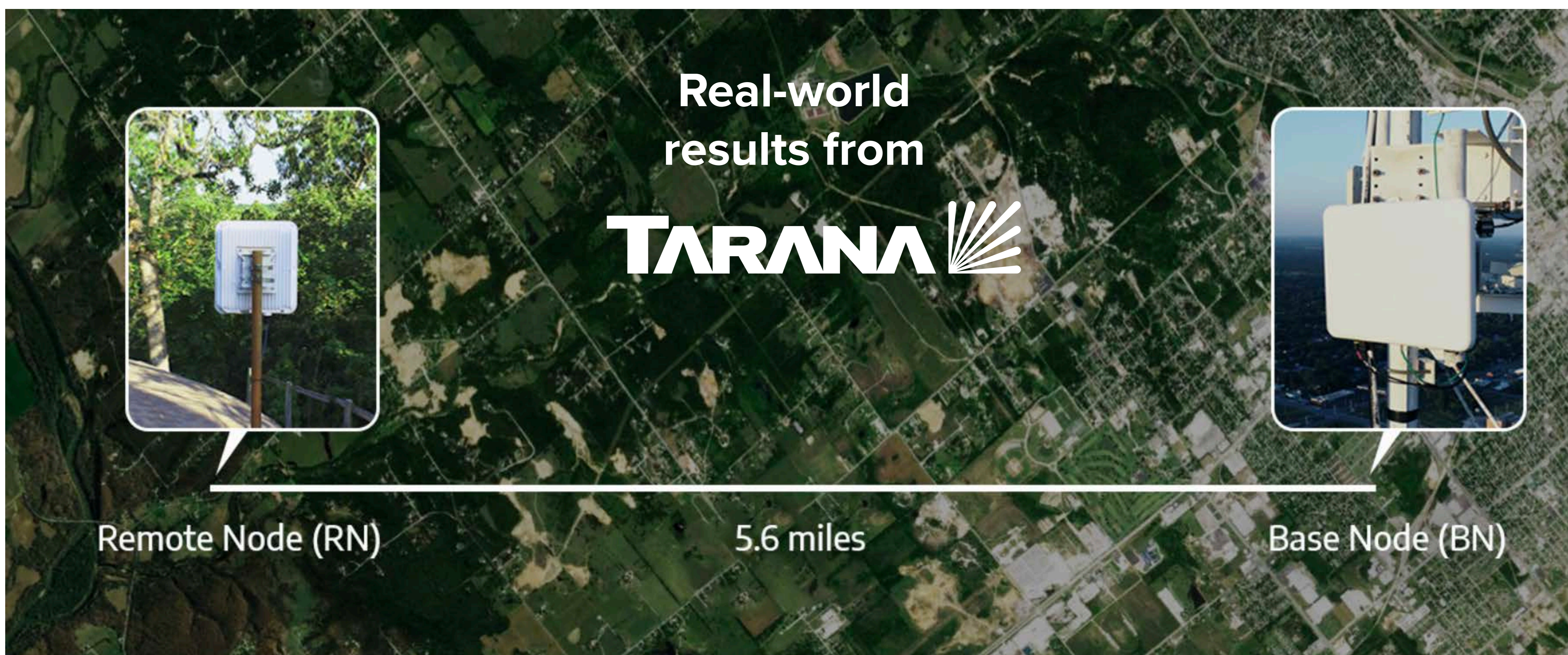
25m tower, 1000 HH/km²
Erceg B propagation
Sacramento, CA example

1km



G1 Highlights

- Up to 800 Mbps aggregate throughput per link
- Up to 9.6 Gbps capacity / site / 80 MHz channel (using free, unlicensed spectrum)
- 1024 users / site (256 / sector)
- Industry-first cancellation of unlicensed-band interference
- 3 or 5 GHz
- Simple cellular deployment model
- ~2x cellular range in NLoS or LoS conditions
- Compact, integrated base node and low-cost remote node
- Enhanced TR101 Broadband Forum network architecture (no complex packet core required)
- Comprehensive cloud suite for planning, zero-touch config, monitoring, SDN management, and support automation
- Software-defined radios, enabling automated, cloud-managed performance upgrades



80 MHz
Channel in 5GHz

11 dB
Excess Pathloss

29 dB
RN Interference/ Noise Ratio

11 dB
RN Signal/ Noise Ratio

438 Mbps
Channel in 5GHz



Creating connections that matter

www.pcs-tech.com
800.659.2170

Radio Network Elements		BN: Base Node RN: Residential Node
Topology	Per BN	Scheduled, concentrated multi-point
Maximum#ofUsers	Per Site (4 BNs)	256
	BN	1024
Channel Bandwidth	RN	80MHz(2x40MHz)
Aggregate Capacity (UL + DL)	Per Link	80MHz(2x40MHz)
	Per BN	800 Mbps
	Per Site (4 BNs)	2.4 Gbps
Duplexing		9.6 Gbps TDD
Downlink / Uplink Ratio		Configurable 2:1 or 4.5:1 (network-wide)
Modulation		QPSK 1/2 to 256 QAM 7.35/8 UL / DL
ACM		Hitless automatic modulation rate control
Carrier Aggregation		Two contiguous or non-contiguous channels up to 40 MHz each
MIMO Streams Per Link		1 x 1, 2 x 2
MU-MIMO Streams at Aggregation Point		6 MU-MIMO streams per BN
		24 MU-MIMO streams per site
Spectral Efficiency		30 bps/Hz per BN
		75 - 90 bps/Hz per band per site, configuration dependent
Typical Range	NLoS	up to 3 km
	LoS	up to 15 km
Frequency Reuse Factor		Universal frequency reuse (k = 1)
		Enabled by advanced self-interference cancellation
Form Factor	BN	Outdoor micro enclosure (fully-integrated antenna, RF, and baseband) 4 BNs for 360° coverage
	RN	Outdoor, single enclosure (fully-integrated antenna, RF, and baseband)
Beamforming		Auto-convergent, retro-directive
Latency (1-way avg)		<5msec
Interference Management		Self-interference cancellation, Advanced Burst Interference Cancellation (ABIC)
Scheduler		Advanced 4D frame-based scheduling
Frequency Support		3.550-3.700 GHz (FCC CBRS)
		5.150-5.250 GHz (FCC/ISED)
		5.725-5.850 GHz (FCC/ISED)
Model Number	BN 5GHz	G1-BN5AS1002
	BN CBRS (Cat B)	G1-BN3AS1001
	RN 5GHz	G1-RN5AS1002
	RN CBRS (Cat B)	G1-RN3AS1001
Compliance		RSS-247, FCC 15E, FCC Part 96, WINNF-TS-0122
Safety		IEC 62368-1, IEC 60529, IEC 60950-1, IEC 60950-22
Management / Control Plane Security		Certificate, HTTPS
Data Plane Security	RF Link Encryption	AES-128
Tarana Cloud Suite		Scalable, microservices-based, multi-tenant network management
		Zero-touch provisioning and control of radios with streaming telemetry
		Firmware and configuration management
		24 x 7 x 365 KPI monitoring and management
		Fault management and historical events
		Network Analytics
	SAS Domain Proxy	
		Northbound REST-API for customer and operator portal (B/OSS)
Interfaces	BN	Two 10-Gbps SFP+ and one 1-Gbps data interfaces
		Additional 1-Gbps mgmt Ethernet interface
	RN	-48VDCPower
HxWxD	RN	1-Gbps Ethernet interface, with PoE support
	BN	16.4x21.x4.6in.
Weight	RN	11x12.5x3in.
	BN	42lbs.
Power Consumption (typical)	RN	7lbs.
	BN	275W
Mounting	RN	35W
	BN	Saddle clamp for pole mount (2-3/8" - 5" OD)
	RN	Band clamp for pole mount (1.5"-2.5" OD) or wall mount