



CITY OF CALABASAS

WIRELESS 101

October 16, 2012

Presenter:

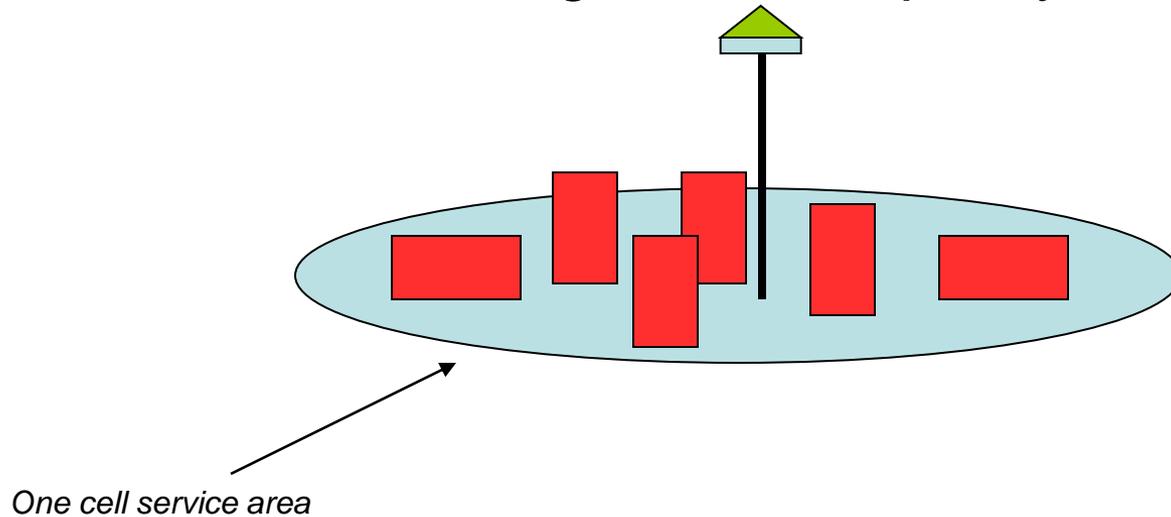
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Los Angeles, California

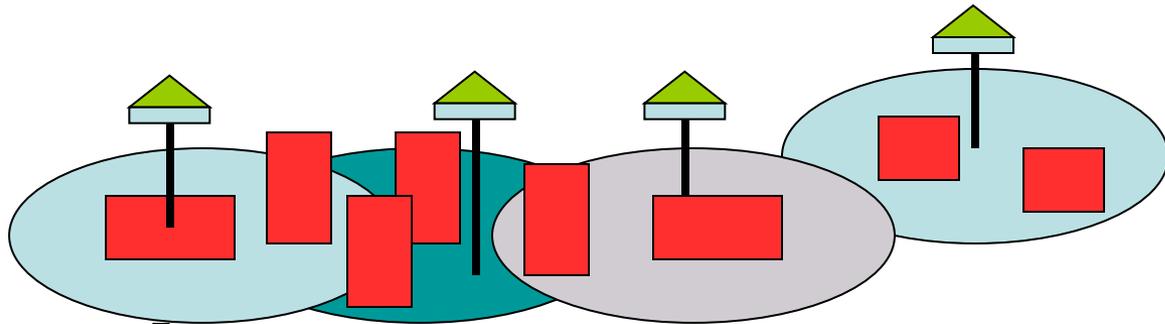
Key principles:

- **Understanding cell networks**
 - Systems Grow Up...
 - WAY, WAY UP...
 - Lots of Coverage, Little Capacity



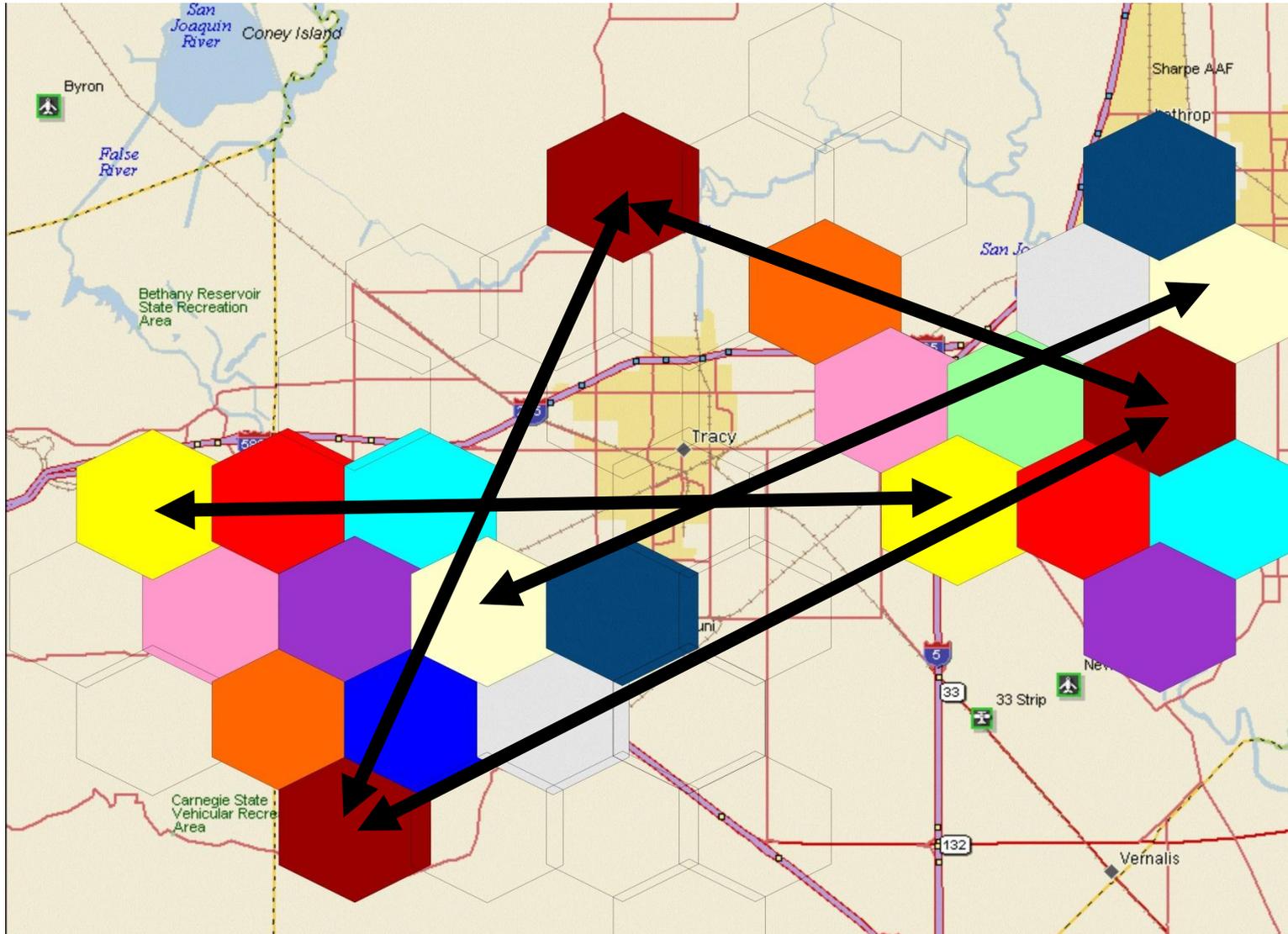
Key principles:

- **Understanding cell networks**
 - Systems Grow Down...
 - WAY, WAY DOWN...
 - Little Per-Site Coverage, Lots of Per-Network Capacity



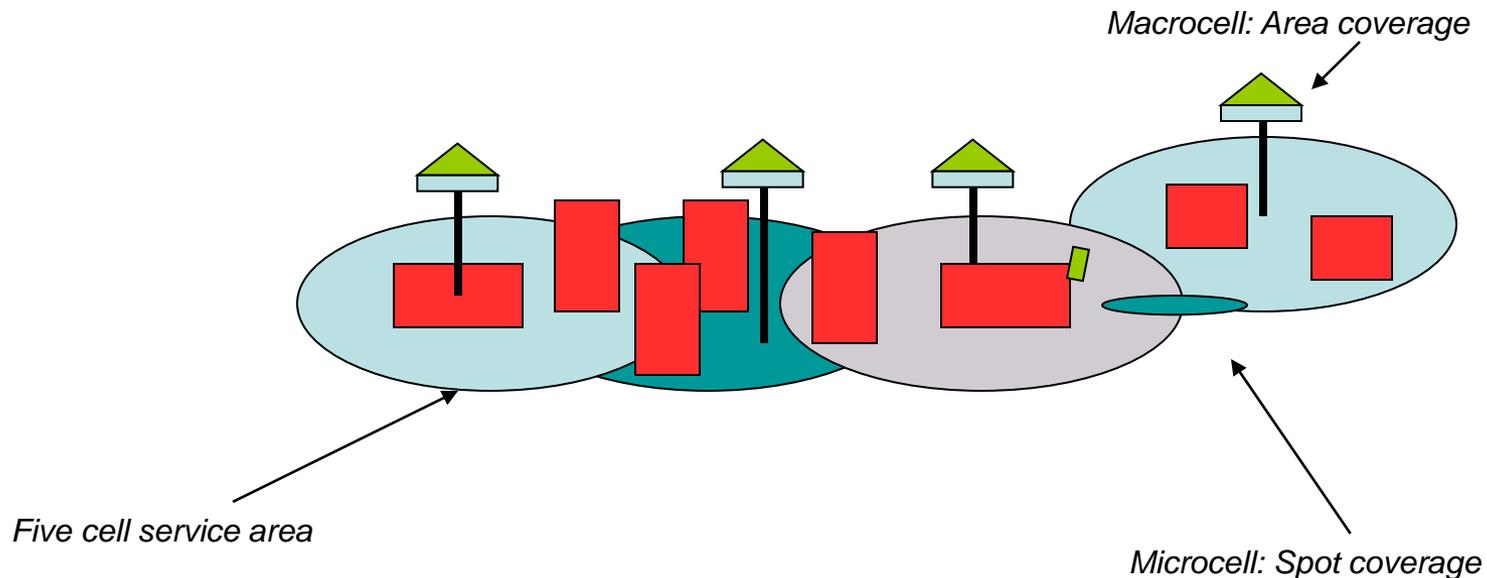
Four cell service area

Frequency Reuse: Think of a Jigsaw Puzzle

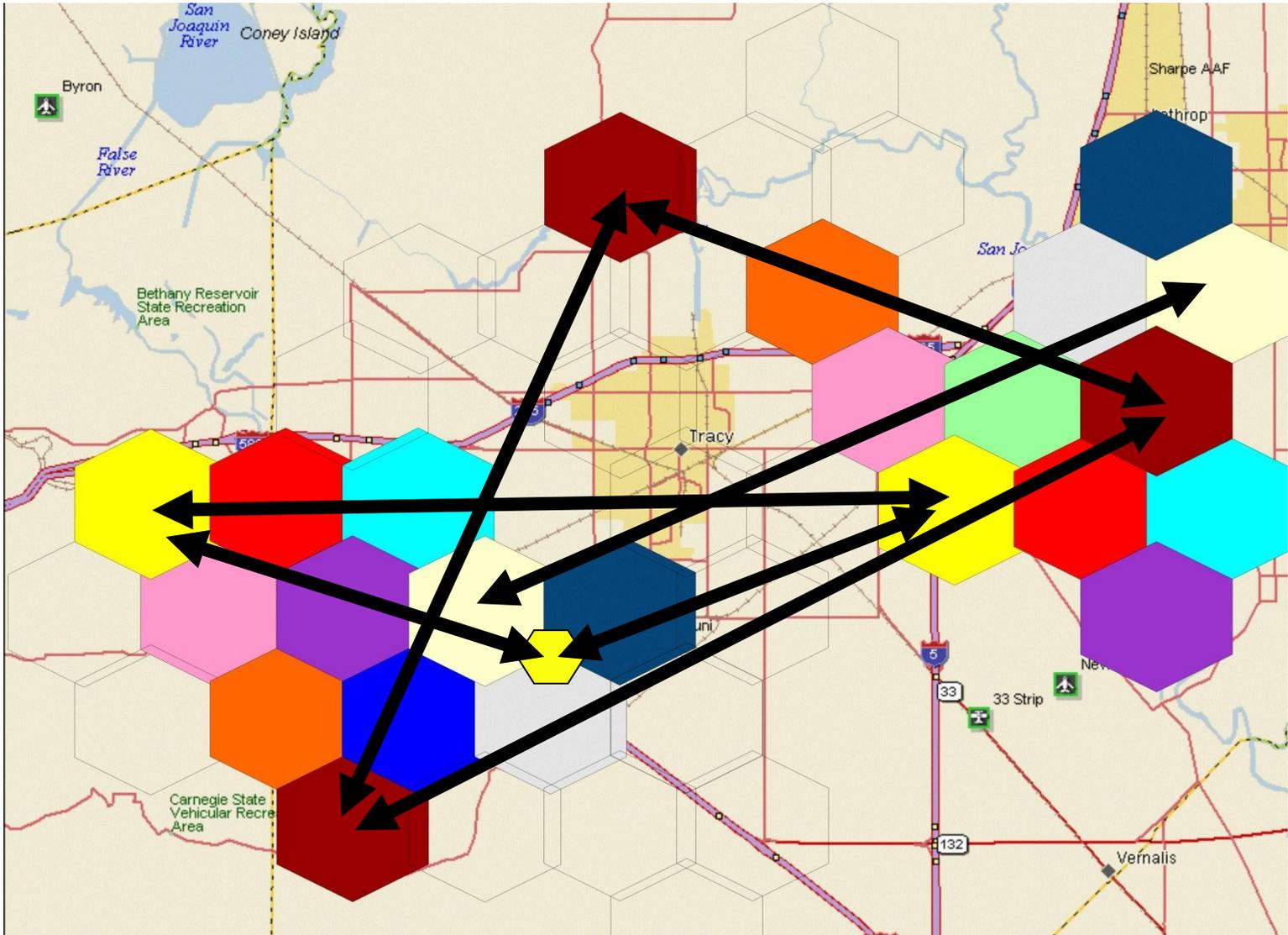


Key principles:

- **Understanding cell networks**
 - Systems Grow Down...
 - WAY, WAY DOWN...
 - Spot Capacity

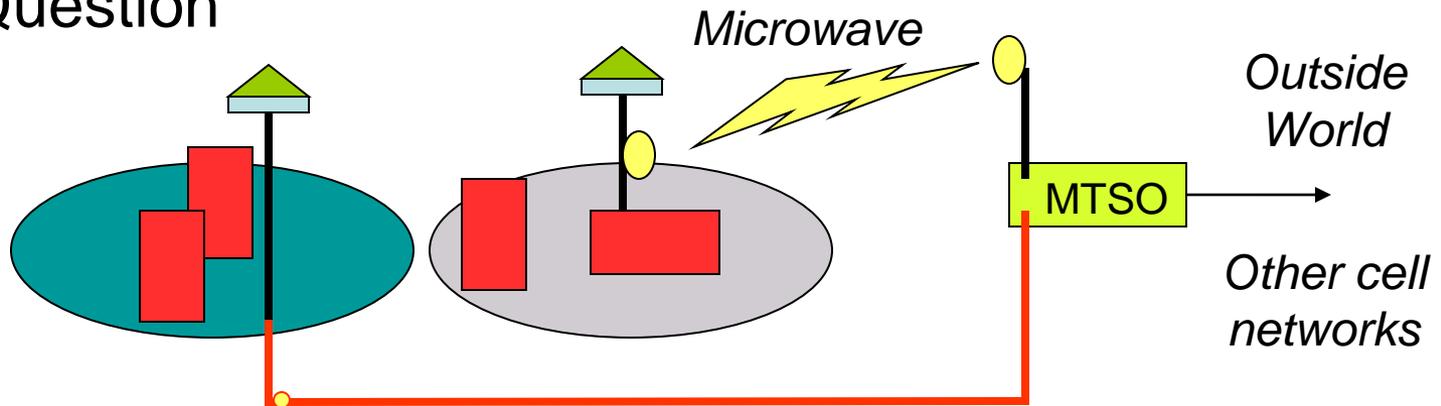


Drop-in Cells for Spot Coverage: Think of cutting up a Completed Jigsaw Puzzle Into Even Smaller Pieces!



Microwave/Repeater v. T1 lines

- No Cell Site is an Island
 - Carriers prefer point-to-point microwave or repeater antennas (capital investment; no recurring monthly charges to LEC)
 - Governments prefer T1 (aesthetics: eliminates the need for 1 or 2 flat or dish antennas)
 - Pivot Point: Where the dish is not visible & the \$6,409 Question



T1 or Fiber optic (Owned, LEC, Cable TV)

Parts of a cell site

Parts of a cell site:

- Antenna(s)
 - Omnidirection (whip)
 - Directional (panel)
 - Microwave (dish)
 - GPS Antenna
 - Equipment Building



Parts of a cell site

- Cabinets
 - Base Station
 - Power
 - Meter
 - Telco

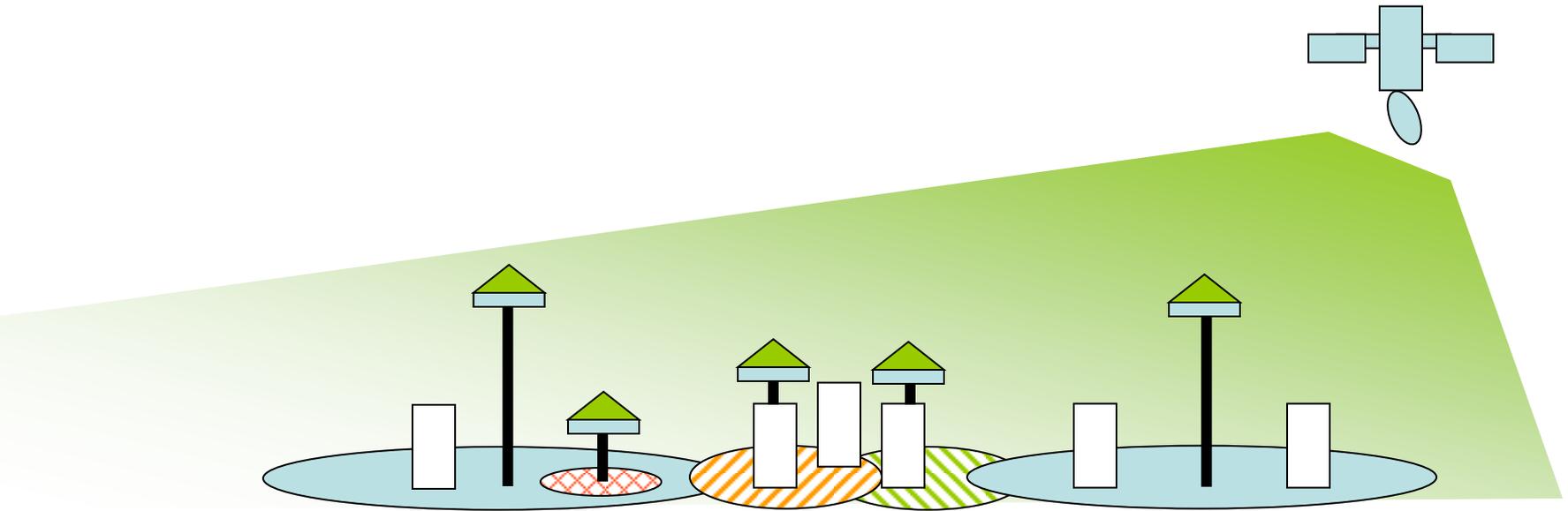


Parts of a cell site

Parts of a cell site:

- Other stuff
 - Standby power connector
 - GPS Antenna
 - LMU Antenna





Most digital cell systems use **GPS** time signals to synchronize their networks to a common time standard. This results in virtually unnoticeable hand-offs between cell sites.

Distributed Antenna Systems (DAS)

Carrier's carrier

**Protocol
Agnostic**

**Antenna
extension from
remote base
station**







Metro
444
448

No Parking

Radio Frequency Emissions Safety 101

Congress delegated sole national authority to the FCC to set RF emissions safety standards (Telecom Act of 1996).

FCC set the standards based on input from various government agencies and private entities

Recent government recommendations to review RF safety standards for handsets (“SAR”), not wireless cell sites.

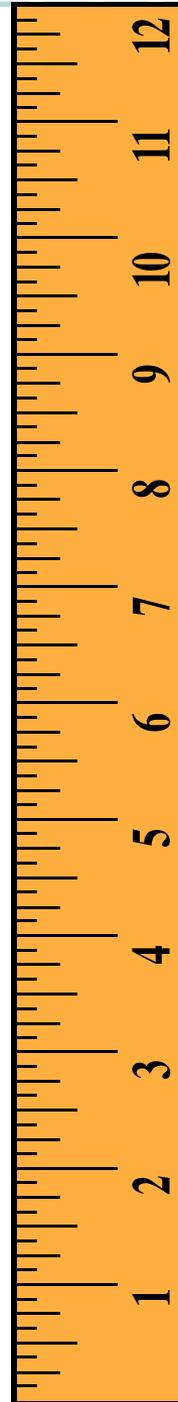
FCC's RF Safety Rules

Point of measurable physiological change (temperature)

Where does the FCC set its 100% uncontrolled limit?

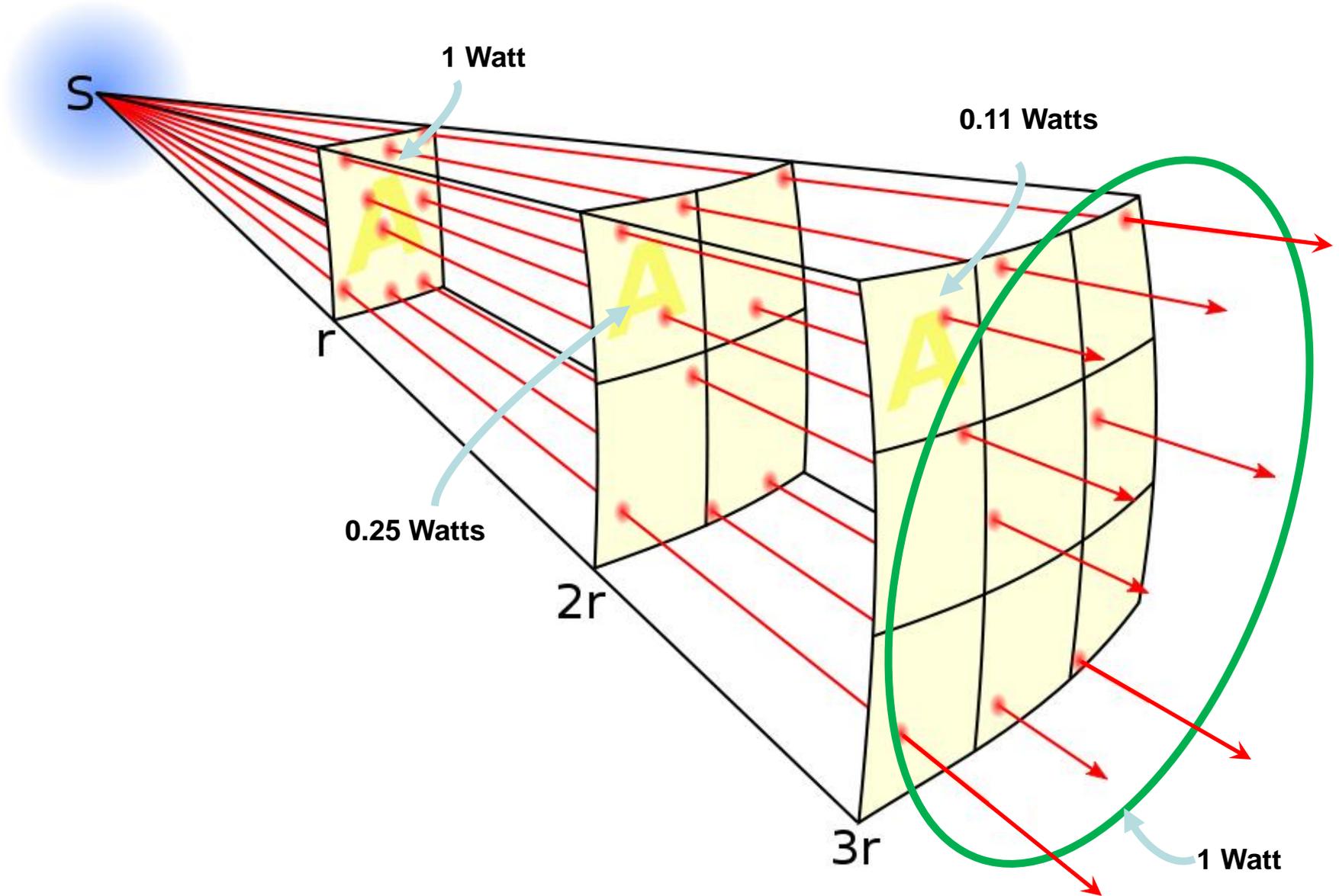
The FCC's 100% uncontrolled exposure limit

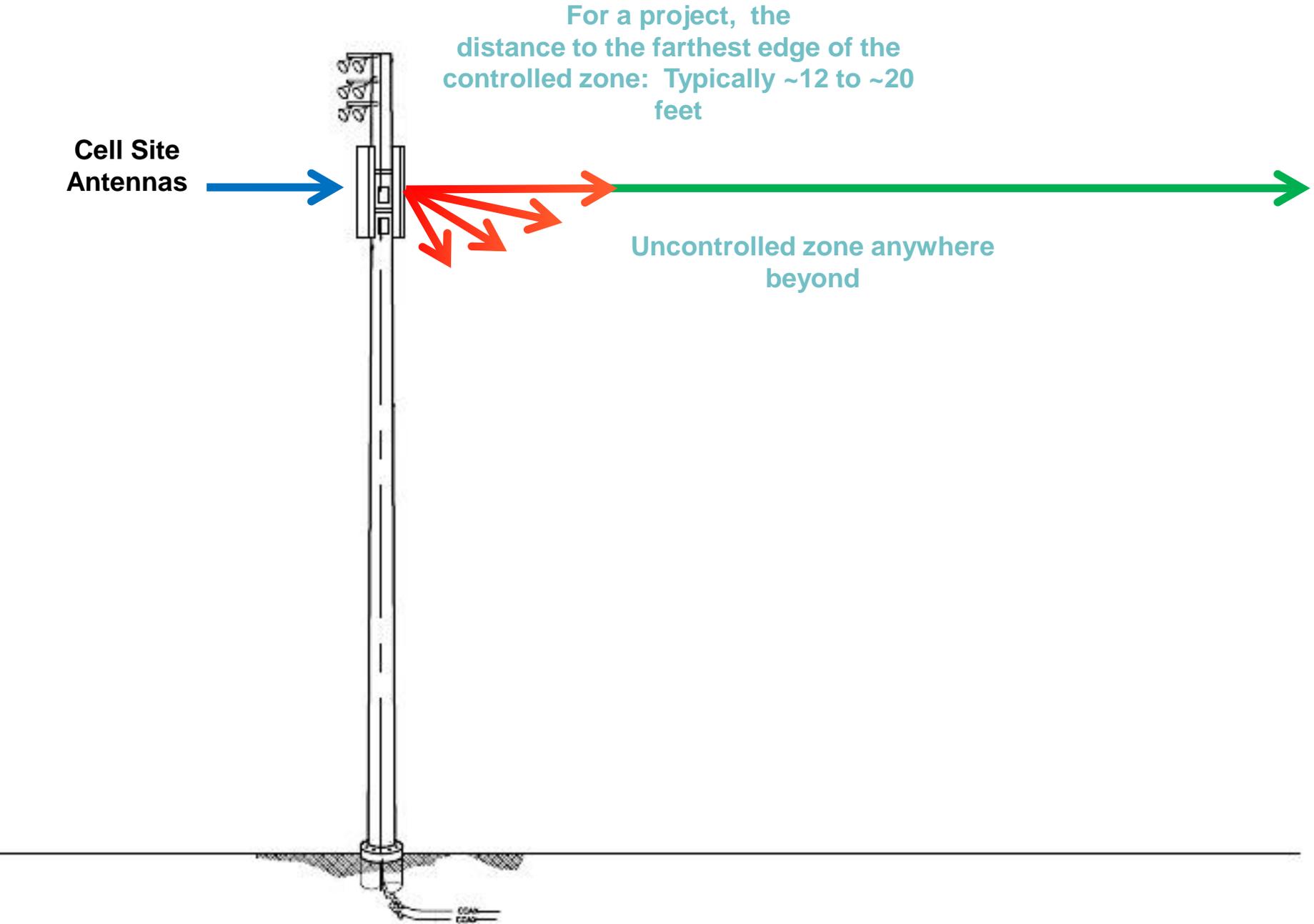
Typical for Carriers:
A fraction of 1% of the FCC's 100% uncontrolled exposure limit



50x Margin

The Inverse Square Law in Action





Cell Site
Antennas

For a project, the
distance to the farthest edge of the
controlled zone: Typically ~12 to ~20
feet

Uncontrolled zone anywhere
beyond



FCC SHOT CLOCK

- 2009: Established 90/150 day clocks for processing wireless applications.
- 90 days for collocations; 150 day for new and 'other' wireless applications
- Affirmed by the 5th Circuit Court of Appeals in January 2012
- Cert granted by U.S. Supreme Court this month.
- Rules remain effective while under review

6409(a) Michigan Style

Collocations must be approved if the proposed collocation will not do any of the following:

- (i) Increase the overall height of the wireless communications support structure by more than 20 feet or 10% of its original height, *whichever is greater*.
- (ii) Increase the width of the wireless communications support structure by *more than the minimum necessary* to permit collocation.
- (iii) Increase the area of the existing equipment compound to greater than 2,500 square feet.

6409(a) Michigan Style

Adding insult to injury...



Michigan law provides for a 14 day approval period; less is okay, but on the 14th day the collocation is deemed approved.

6409(a) California Style?

***Example
Wireless Installations
in Calabasas ...***





SPAY & NEUTER

ANIMAL CLINIC

101
860-0888
CALABASAS ANIMAL CLINIC

6WBF829











Agoura Rd

RIGHT LANE
WEST
TURN RIGHT



*Examples from
outside of Calabasas*





PLAZA MAYOR



Mr. HAIR SALON

JACK'S PIZZA

STARBUCKS
COFFEE

JACK'S
PIZZA

OLD STONE
CREAMERY



100

992

GOLDEN NAILS

Discovery Children's Dentistry **CHILDREN'S**

DENTISTRY 438-1279

STOP

AUTO • PROPERTY
LIFE • HEALTH

ALLSTATE

HUNTINGTON

LEARNING CENTER

194

Submarina





THE CHURCH AT
ROCKY PEAK







주안빌승교회

Light of Christ
CHURCH











DANA
POINT

STOP

PEDESTRIAN
STOP

SPRINK HEAD PARK



TOWNE HALL

CAFE

FEED. LIVESTOCK
POULTRY

NOW OPEN

FIRE LANE

FIRE LANE



LIQUOR ON THE ROCK

DENTISTRY

Massimo's Italia Pizzeria



Ralphs

STOP















47537





Questions, please!