

## RTG-OPASTCO 700 MHz Workshop:

### What is 700 MHz Spectrum Worth?

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## Backdrop: Four Points to Consider

The 700 Market: Who's Got It

Competition: Success Against AT&T and Verizon

LTE: Standardized Fragmentation

Wireless Broadband: The Clearwire Experience

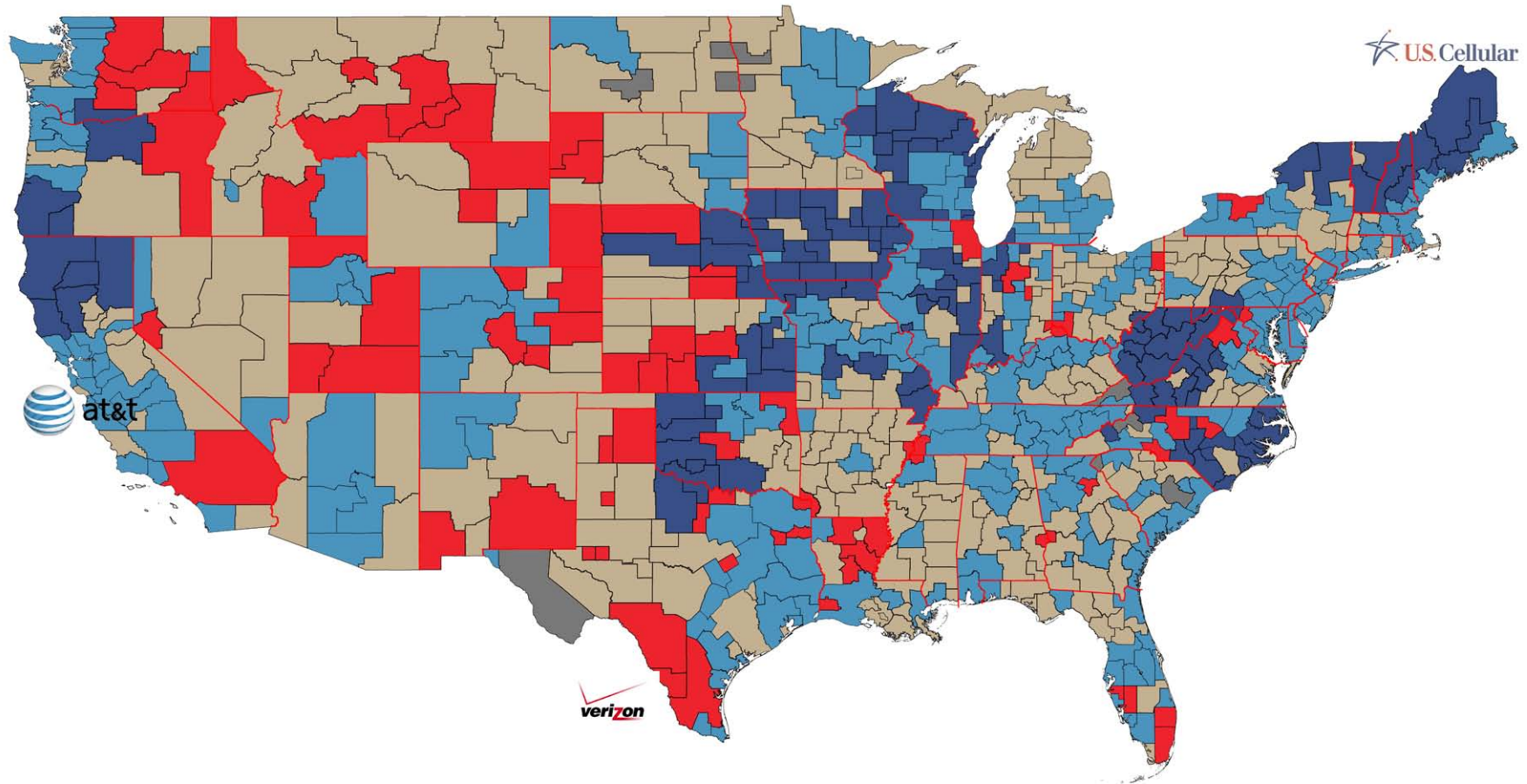
Other Considerations

## The 700 Market: Who's Got It

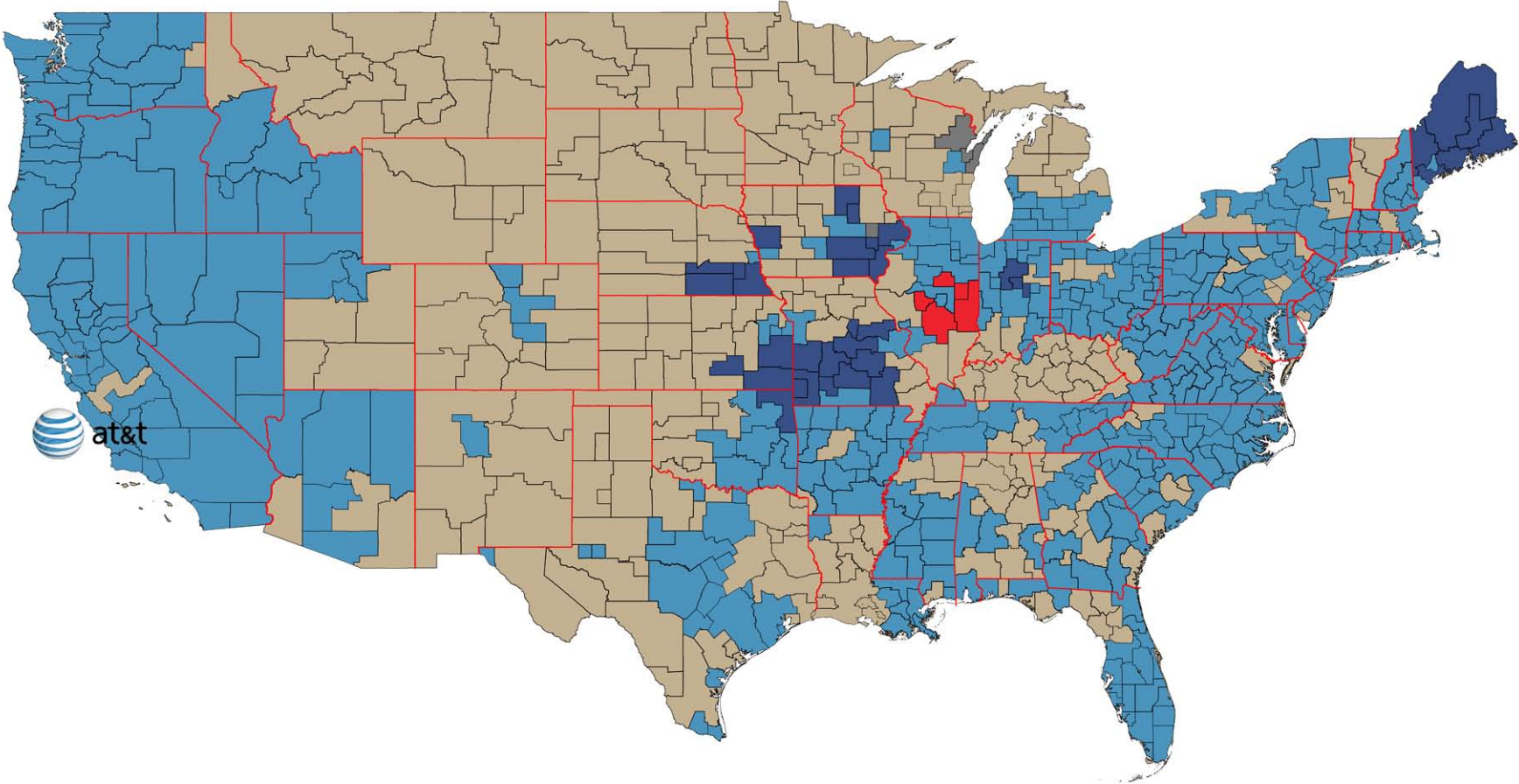
	B (12 MHz)			C (12 MHz)			Upper C (22 MHz)			A (12 MHz)		
	Markets	POPs (MM)	% Total	Markets	POPs (MM)	% Total	Markets	POPs (MM)	% Total	Markets	POPs (MM)	% Total
Verizon	76	48.8	18%	5	1.0	0%	6	279.6	100%	25	147.9	53%
AT&T	225	174.7	63%	384	224.4	80%	-	-	0%	-	-	0%
US Cellular*	127	18.8	7%	32	4.8	2%	-	-	0%	24	20.5	7%
<b>Subtotal</b>	<b>428</b>	<b>242.3</b>	<b>87%</b>	<b>421</b>	<b>230.2</b>	<b>82%</b>	<b>6</b>	<b>279.6</b>	<b>100%</b>	<b>49</b>	<b>168.4</b>	<b>60%</b>
Cox	8	1.7	1%	-	-	0%	-	-	0%	14	19.0	7%
Cavalier	12	2.2	1%	-	-	0%	-	-	0%	22	24.6	9%
CenturyNet	48	6.9	2%	4	0.4	0%	-	-	0%	20	9.3	3%
CellSouth	10	1.5	1%	11	3.2	1%	-	-	0%	14	13.5	5%
Redwood	5	0.8	0%	17	7.3	3%	-	-	0%	-	-	0%
Triad 700	27	4.7	2%	-	-	0%	-	-	0%	4	2.2	1%
Others	161	18.1	7%	252	38.1	14%	-	-	0%	44	41.9	15%
<b>Subtotal</b>	<b>271</b>	<b>35.9</b>	<b>13%</b>	<b>284</b>	<b>49.0</b>	<b>18%</b>	<b>-</b>	<b>-</b>	<b>0%</b>	<b>118</b>	<b>110.5</b>	<b>40%</b>
<b>Total</b>	<b>699</b>	<b>278.2</b>	<b>100%</b>	<b>705</b>	<b>279.2</b>	<b>100%</b>	<b>6</b>	<b>279.6</b>	<b>100%</b>	<b>167</b>	<b>278.9</b>	<b>100%</b>

\*With King Street Wireless

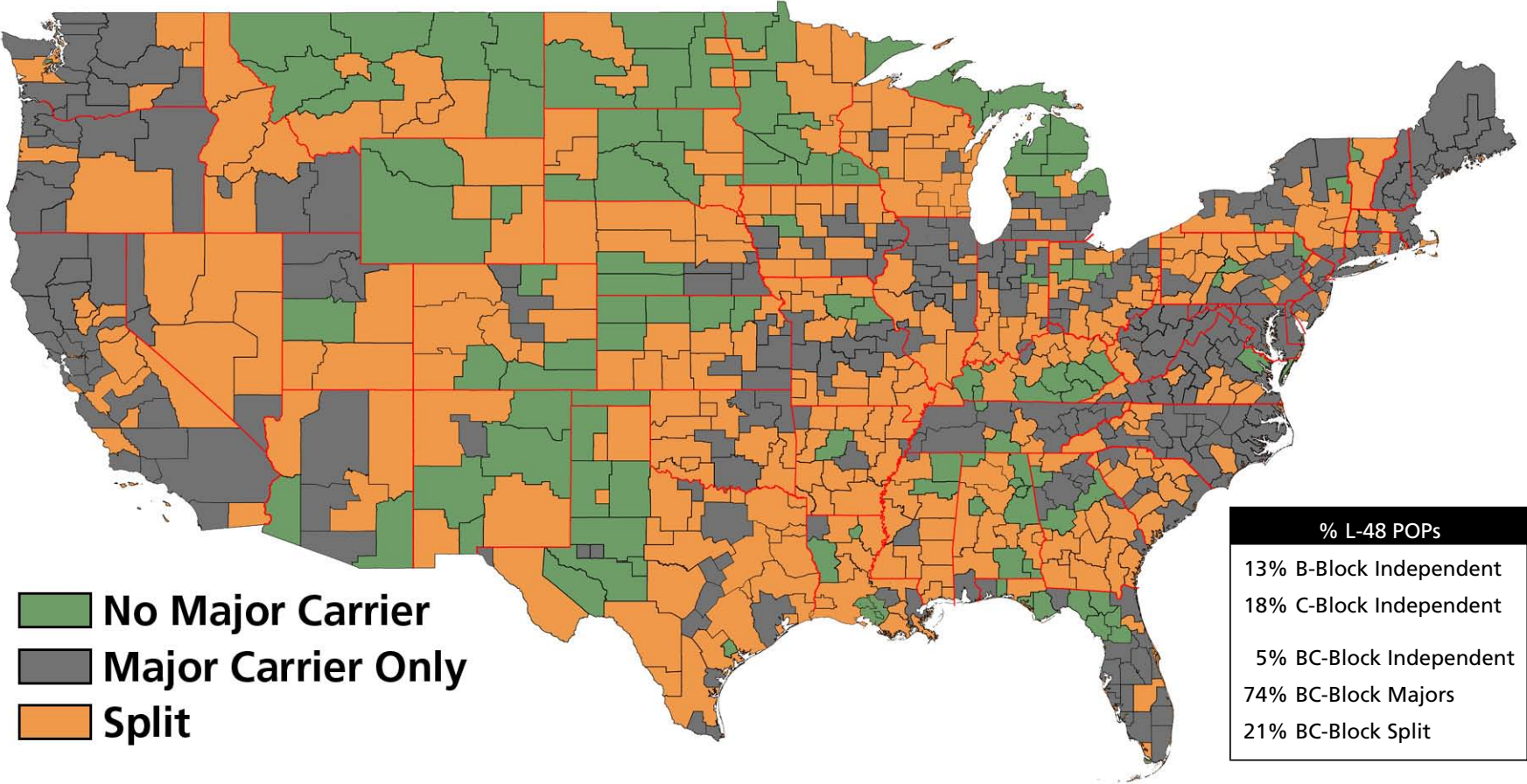
# B-Block Holders Map



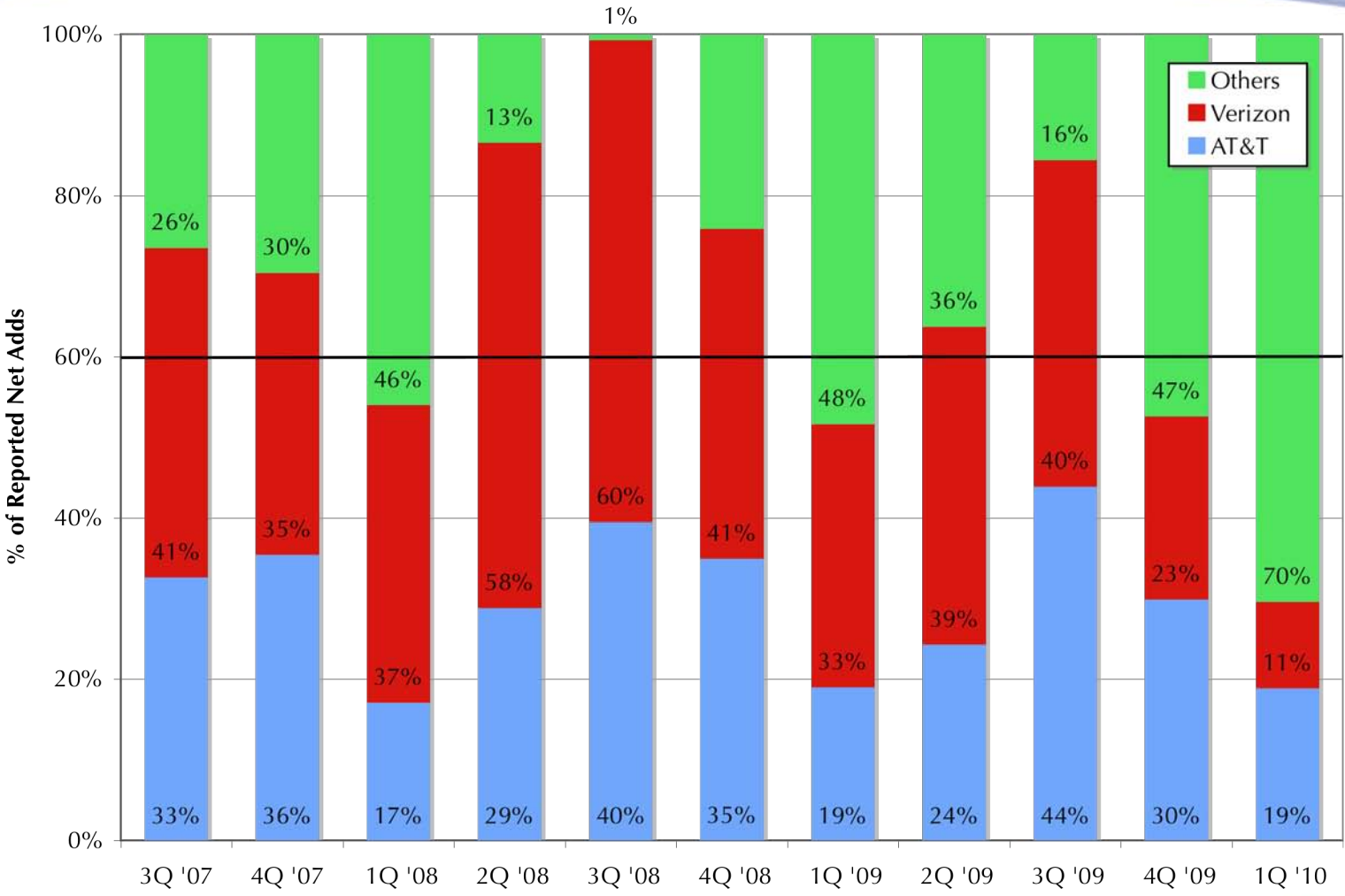
# C-Block Holders Map



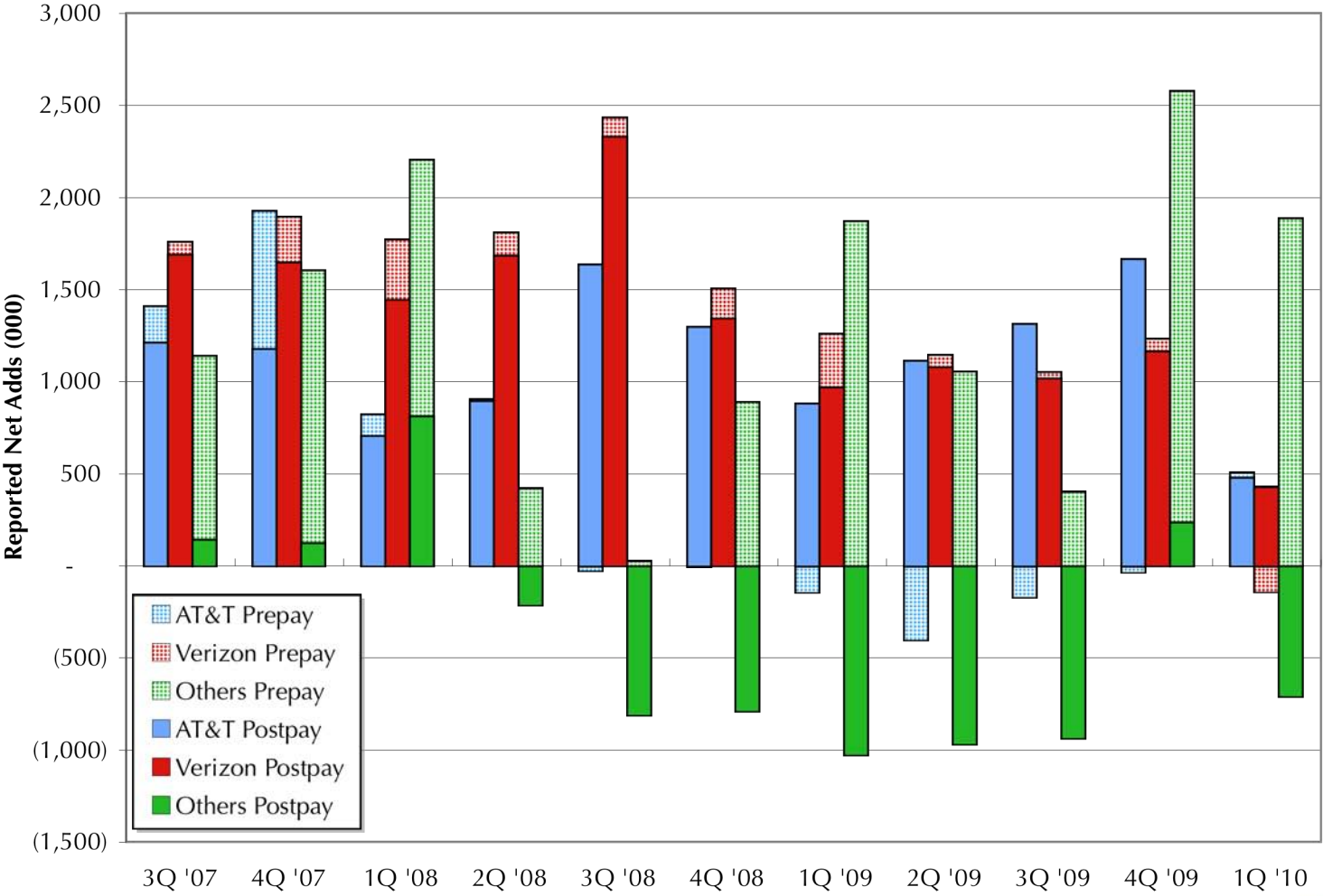
# Summary Holders Map



# Competition: Success Against AT&T and Verizon



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## LTE: Standardized Fragmentation

Except for Clearwire, all major US carriers have announced LTE as its 4G platform

- Common switch, software and base station technology
- Does not necessarily apply to end-user devices

“Common” technology doesn’t necessarily mean interoperability

Band plans critical to ecosystem

- 850: Band 5
- PCS: Band 2
- AWS: Band 4
- EBS/BRS: Band 7
- 700: Bands 12,13, 14, 17

AT&T and US Cellular only major carriers committed to 700 MHz B, C Blocks

- Verizon: Upper C, but significant holdings in A, B Blocks
- T-Mobile, Leap, Metro: AWS
- Sprint: EBS/BRS



# 700 MHz Band Plan

<b>Lower 700</b>	Channel	52	53	54	55	56	57	58	59
	Block	Lower A	Lower B	Lower C	Lower D (Qualcomm)	E	A	B	C
	Area	BEA	CMA	CMA	REAG	BEA	BEA	CMA	CMA
	Frequencies	698 – 704	704 – 710	710 – 716	716 – 722	722 – 728	728 – 734	734 – 740	740 – 746
	Band	12 Uplink				12 Downlink			
		17 Uplink				17 Downlink			

<b>Upper 700</b>	Channel	60	61	62	63	64	65	66	67	68	69				
	Block	Upper C (VZW)		A	D (FCC)	Public Safety		B	Upper C (VZW)		A	D (FCC)	Public Safety		B
	Area	REAG		MEA	National			MEA	REAG		MEA	National			MEA
	Frequencies	746 – 757		757	758 – 763	763 – 775		775	776 – 787		787	788 – 793	793 – 805		805
	Band	13 Downlink			14 Downlink				13 Uplink			14 Uplink			

# Wireless Broadband: The Clearwire Experience

## REPORTED METRICS

(\$MM, except per-unit measures)	6/30/08	9/30/08	12/31/08	3/31/09	6/30/09	9/30/09	12/31/09	3/31/10
<b>Revenues</b>	\$ 58.6	\$ 60.8	\$ 59.7	\$ 62.1	\$ 63.6	\$ 68.8	\$ 79.9	\$ 106.7
<b>Operating Expenses</b>	267.0	280.1	304.9	295.1	305.0	360.1	497.6	513.8
Operating Income Loss	(208.4)	(219.3)	(245.2)	(232.9)	(241.4)	(291.3)	(417.7)	(407.2)
<b>EBITDA</b>	\$ (141.9)	\$ (145.6)	\$ (151.0)	\$ (144.0)	\$ (147.0)	\$ (193.8)	\$ (295.7)	\$ (251.6)
Covered POPs	16.8	18.2	18.2	20.6	23.1	25.4	44.7	51.5
Subscribers (000)	461	469	475	500	512	555	642	814
Net Adds (000)	18	8	5	25	12	44	88	172
<b>Churn</b>	2.6%	3.0%	2.8%	2.6%	2.8%	3.1%	3.6%	3.0%
<b>ARPU</b>	\$ 39.28	\$ 40.43	\$ 39.70	\$ 39.52	\$ 39.47	\$ 39.71	\$ 39.86	\$ 42.77
<b>CPGA</b>	449	404	468	466	524	563	624	439

## ALPINA METRICS

Average Customer Life (Mo.)	38	33	36	38	36	32	28	33
Months to Cover CPGA	23	20	24	24	27	28	31	21
Lifetime Sub. Contribution to Capital	\$ 306	\$ 270	\$ 241	\$ 294	\$ 181	\$ 77	(\$ 70)	\$ 274

## Other Considerations

91% of Americans already have a relationship with a wireless carrier

- 87% use a service backed by a publicly-traded company
- 4% are serviced by private companies

Average spectrum depth, excluding 700 MHz holdings

Licensee	Band Type				
	850	1900	SMR	AWS	BRS/EBS
Verizon Wireless	24	20	-	14	-
AT&T	21	34	-	10	-
Sprint/Clear	-	35	18	-	133
T-Mobile	-	26	-	25	-
US Cellular	2	2	-	2	-

Source: 2010 FCC Mobile Wireless Competition Report; As of 2Q 2009

## Stand-Alone “Wireless Play” Tough

Majors have access to 95% of continental US POPs with 700 MHz

- Exclusive coverage for 75% of POPs
- Compares to 5% for non-majors
- Fragmented standards limits consumer ecosystem options

Mobile voice a difficult proposition for a green field project

- 91% penetration
- Verizon and AT&T successfully raiding valuable postpay customer bases of other majors
- Competitor spectrum positions, handset issues, roaming, 4G network core costs

Clearwire’s wireless broadband results less than impressive

Meaningful alternatives

- Seek partnering programs with national carriers: Verizon, Clear, SkyTerra
- Use wireless to enhance existing broadband service
  - Portability of DSL service within ILEC territory
  - Differentiated product bundled with high-margin landline service
  - Increases value of current product

## What's 700 MHz Worth?

Paper gains/losses and holdings costs

Keep, develop and deploy if you can develop a wireless business plan

- Realistic assumptions about adoption rates, network costs and marketing
- Don't omit competitor response from analysis

Sell if you are still wondering how to get into wireless

Think about leveraging 700 MHz holdings to improve project dynamics

- 700 MHz auction MHz-POP pricing outpaced AWS by 6.7x
- Timing: AWS equipment ready today
- Footprint: Trade for a larger AWS or PCS footprint with greater spectrum depth
- Risk: Sell ancillary markets to lower (or pay for) capital costs of current project

All commodity markets change daily

- Don't assume there will always be a buyer
- Mark-to-market
- Spectrum prices rise and fall based on buyer demand, not seller preferences