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May 15, 2019
Washington, D.C.

The Economic Benefits of Keeping the “E” in EBS

A Comparison of Licensing Unassigned EBS to
Educators and Nonprofits, Versus Commercial Auctions

[View the one-page summary](#)

THE ECONOMIC BENEFITS OF KEEPING THE “E” IN EBS:

A COMPARISON OF LICENSING UNASSIGNED EBS TO EDUCATORS AND NONPROFITS VS. COMMERCIAL AUCTIONS

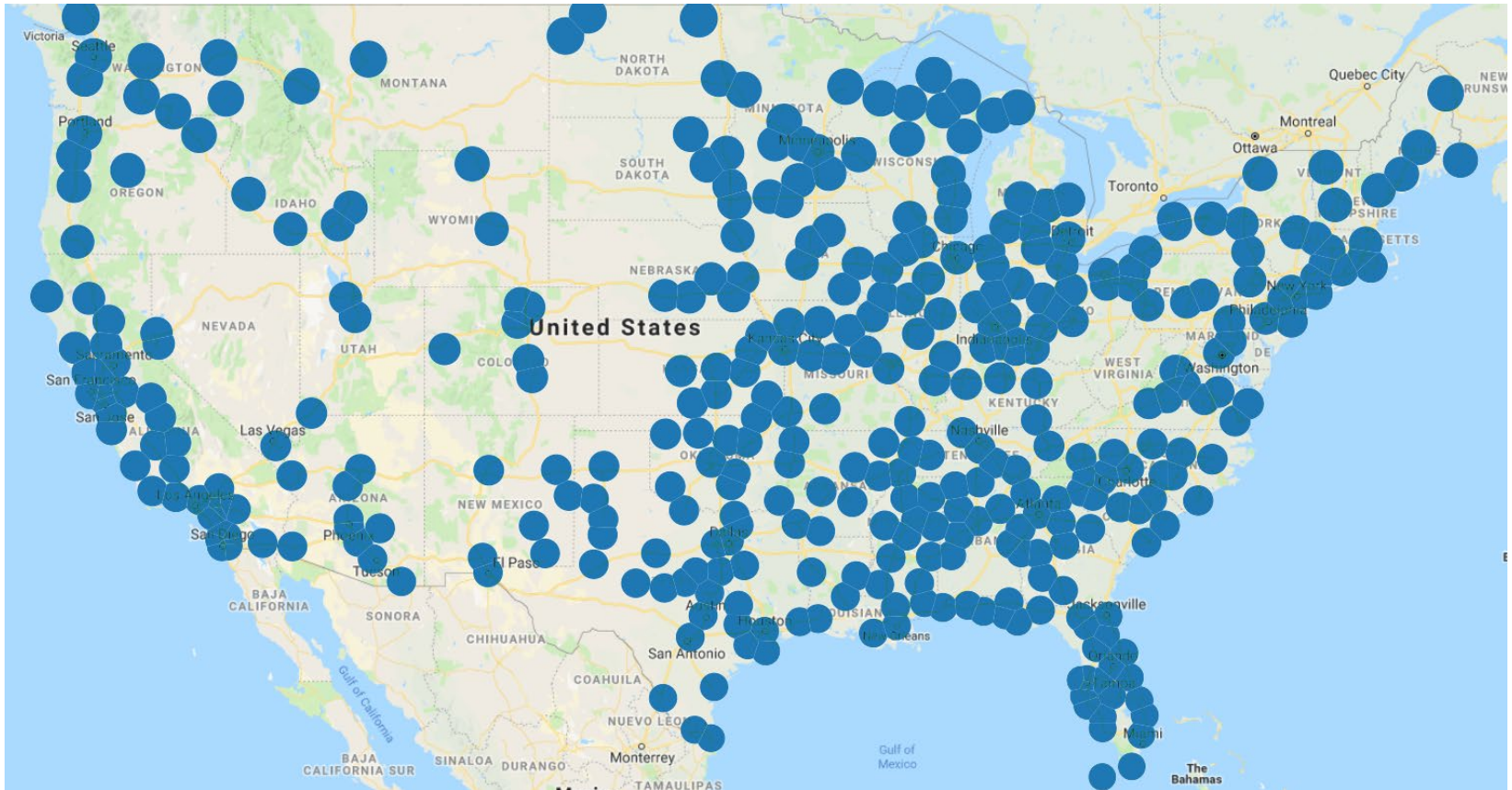


Telecom Advisory Services, LLC

Washington DC, May 15, 2019

APPROXIMATELY 4,000 EBS LICENSES , PRIMARILY IN RURAL PARTS OF THE COUNTRY, HAVE NEVER BEEN ASSIGNED

CURRENT EDUCATIONAL BROADBAND SERVICE LICENSES



Source: FCC Universal Licensing System Data

PURPOSE OF STUDY:

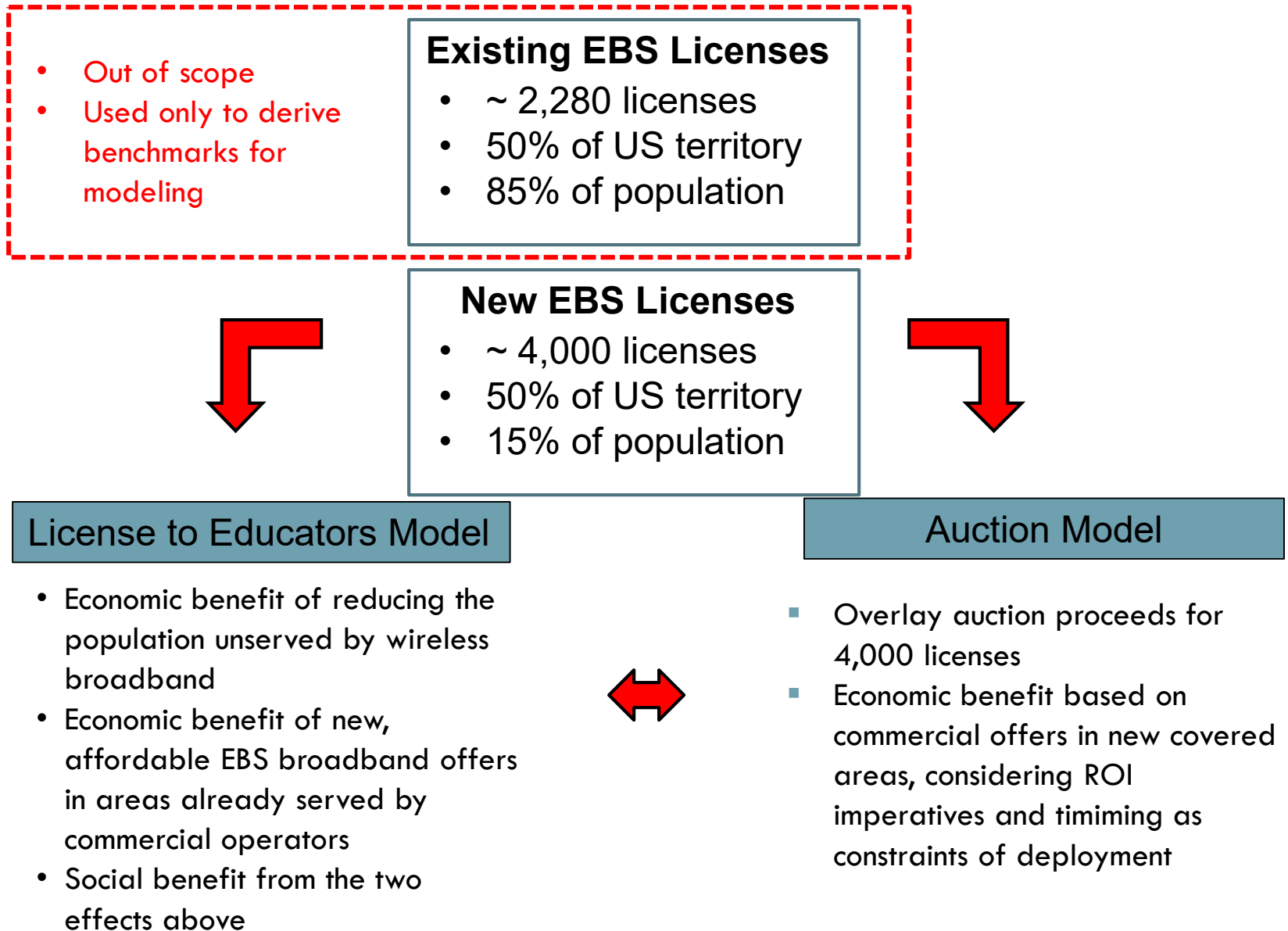
ASSESS THE ECONOMIC AND SOCIAL VALUE OF EXTENDING THE CURRENT LICENSING REGIME

- The FCC is considering various proposals for licensing the remaining 4,000 EBS licenses (“EBS white space”)
- This study considers two proposals:
 - A baseline proposal would **assign the remaining licenses to educational organizations and/or tribal nations**, as it was done before
 - As an alternative, others propose that remaining EBS white space be **auctioned to commercial providers** while simultaneously eliminating all requirements that this spectrum is used for educational purposes
- The FCC also recommends that current EBS licensees be allowed to sell their licenses to commercial operators

KEY STUDY ISSUES

- What is the economic and social value of extending the current EBS licensing regime to educational institutions/tribes?
- What comparable value would be generated if the licenses are auctioned to commercial operators instead?

THE STUDY IS BASED ON ESTIMATING SOCIO-ECONOMIC TRADE-OFFS OF ASSIGNING ~4,000 2.5 GHZ LICENSES THROUGH EITHER CURRENT EBS RULES OR AN OVERLAY AUCTION



SIX SOURCES OF SOCIAL AND ECONOMIC VALUE TO BE ASSESSED

Current Situation

Key question

Reduction of digital divide

- Wireless broadband penetration: 85% (GSMA)
- 78 unserved counties and 141 partially served counties (Form 477)
- Rural county coverage: 50% (Opensignal)

- Which option more effectively reduces the digital divide?

Increase in GDP

- US GDP \$ 19.39 trillion (World Bank)

- Which option generates the largest externalities impacting the GDP?

Reduction of homework gap

- 5,013,242 children under 18 years old no broadband subscription (ACS 2017)
- 2,036,753 children under 18 reside in a household without a computer (ACS 2017)

- Which option has the highest reduction of the homework gap?

Reduction of high school attrition

- 7.4% high school dropout rate (National Center of Education Statistics)
- 70% of high school graduates apply to college but 1 in 5 quit (Dept. of Education)

- Which option has the highest impact on reduction of high school attrition?

Economic Surplus

- Most affordable LTE plan: \$20(*) (3.5% of monthly income of first decile)
- Public libraries use 266 GB per month, interested in saving in data consumption

- Which option increases wireless broadband affordability?

Contribution to Treasury

- The FCC collected \$21.267 billion in 2017-18 spectrum auctions

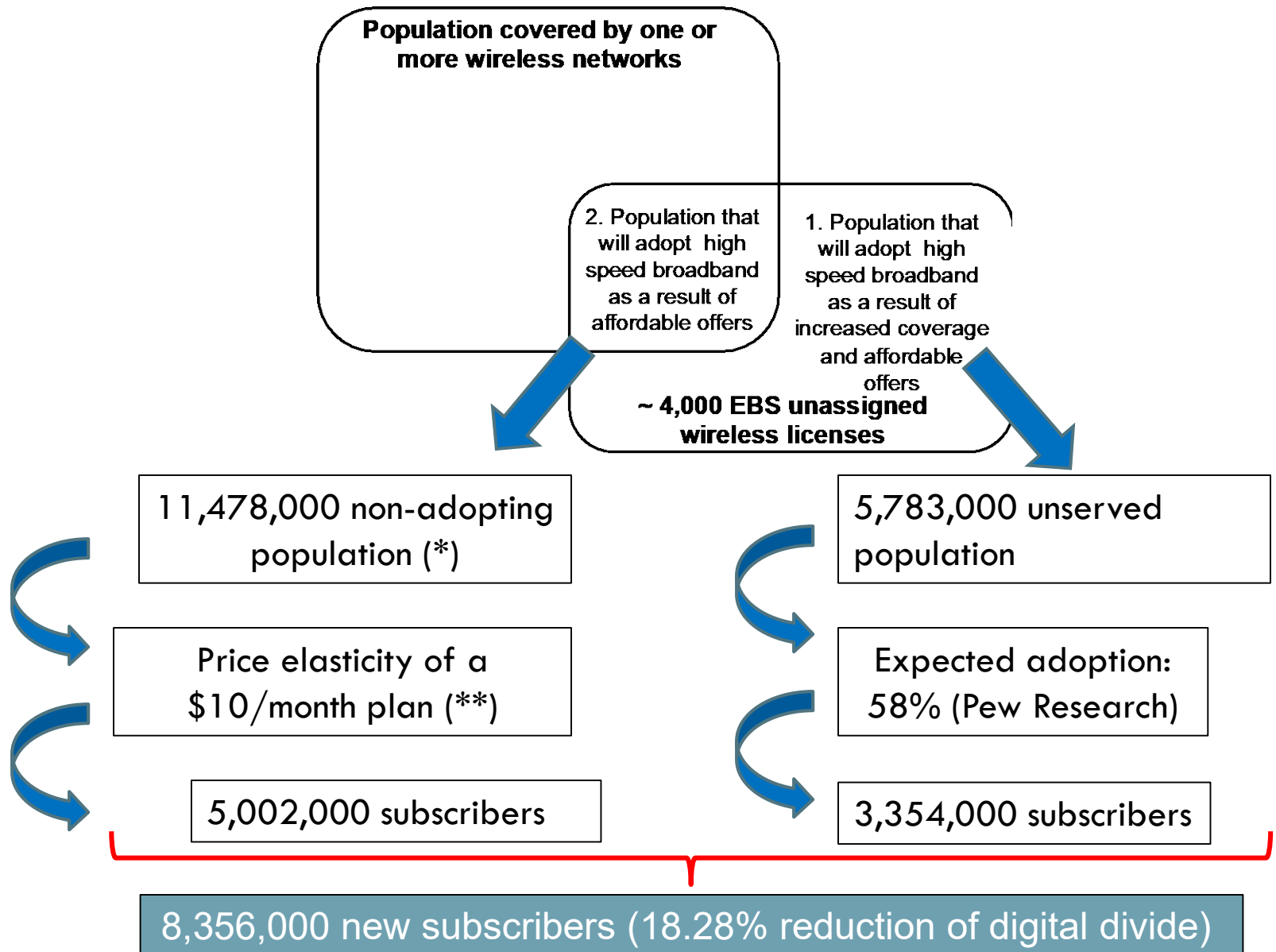
- What is the contribution to the Treasury of each option?

* Verizon Connected Device Ellipsis Hotspot service for US\$ 20 monthly

- Reduction of the digital divide
 - Contribution to GDP
 - Reduction of the homework gap
 - Reduction of high school attrition
 - Economic surplus
 - Contribution to Treasury

REDUCTION OF THE DIGITAL DIVIDE:

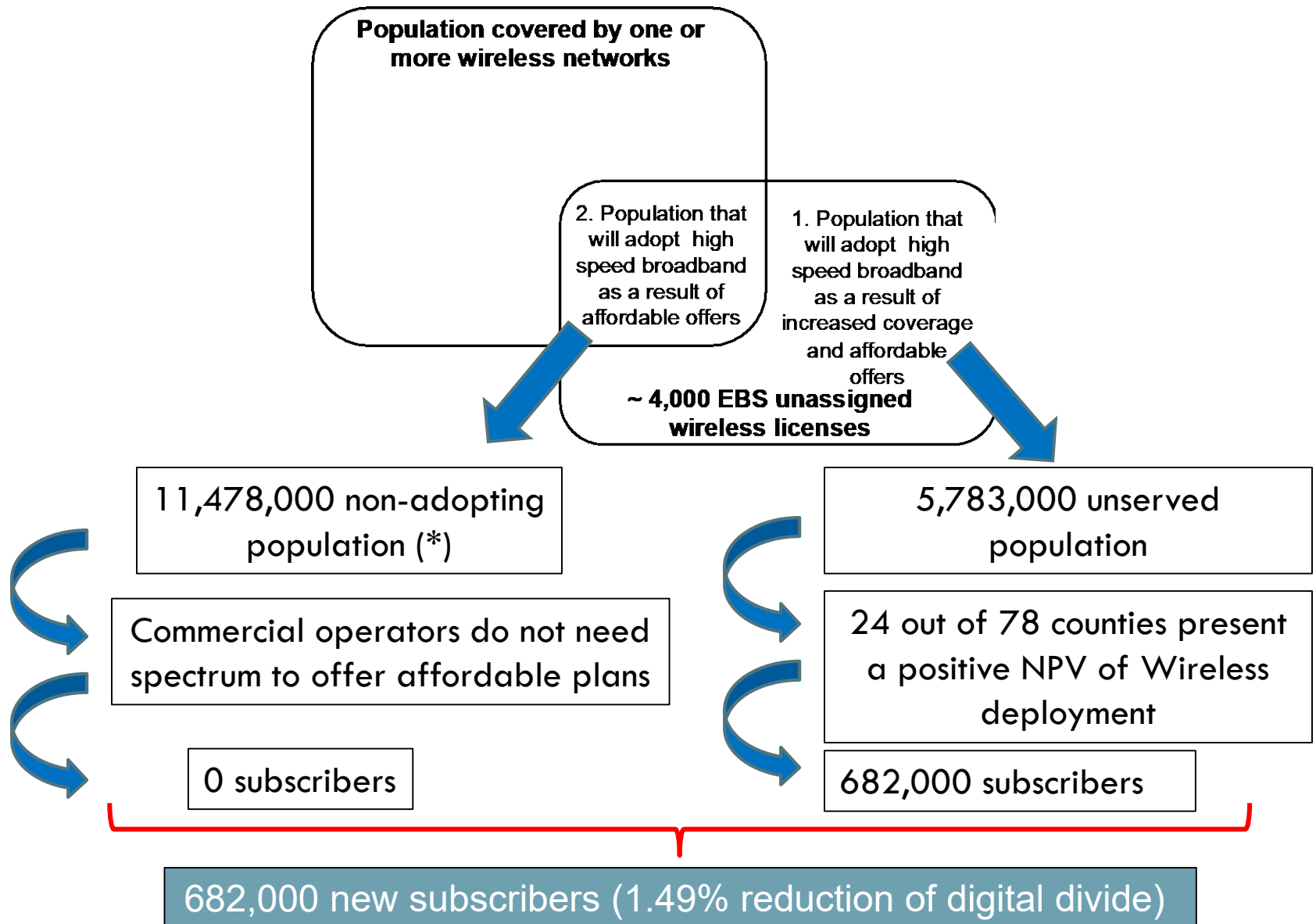
MODERNIZING THE EBS LICENSING MODEL COULD REDUCE THE DIGITAL DIVIDE BY ABOUT 18.28%



* 15,852,000 population already purchasing service. (**) PER SHLB proposal

REDUCTION OF THE DIGITAL DIVIDE:

AUCTIONING UNASSIGNED EBS YIELD ONLY A 1.49% DIGITAL DIVIDE REDUCTION



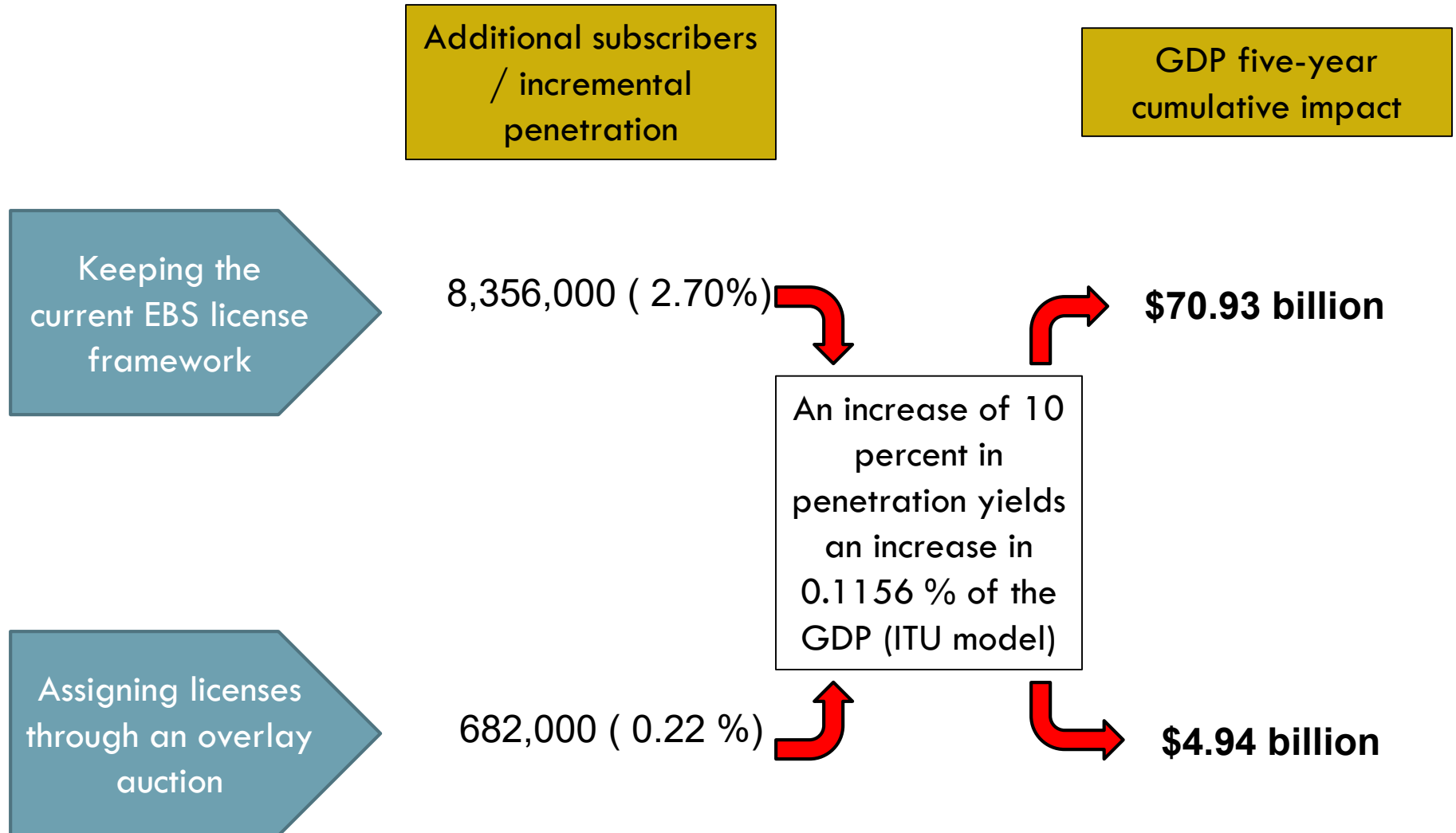
* 15,852,000 population already purchasing service

ASSESSMENT OF OF ECONOMIC AND SOCIAL VALUE

- Reduction of the digital divide
- Contribution to GDP
- Reduction of the homework gap
- Reduction of high school attrition
- Economic surplus
- Contribution to Treasury

INCREASE IN GDP:

THE EBS LICENSING MODEL PRODUCES SIGNIFICANTLY GREATER IMPACT ON GDP

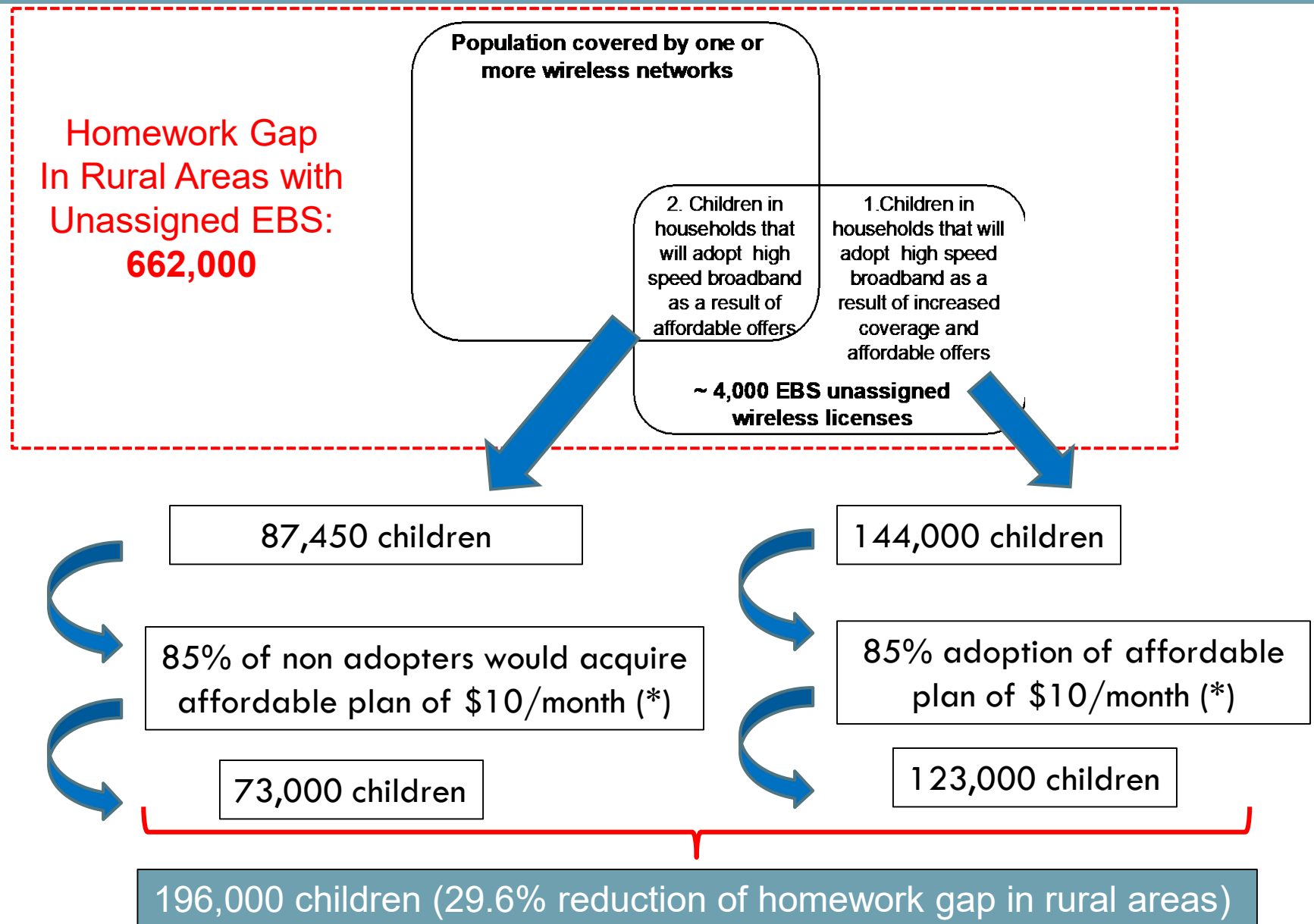


ASSESSMENT OF OF ECONOMIC AND SOCIAL VALUE

- Reduction of the digital divide
- Contribution to GDP
- Reduction of the homework gap
- Reduction of high school attrition
- Economic surplus
- Contribution to Treasury

REDUCTION OF THE HOMEWORK GAP:

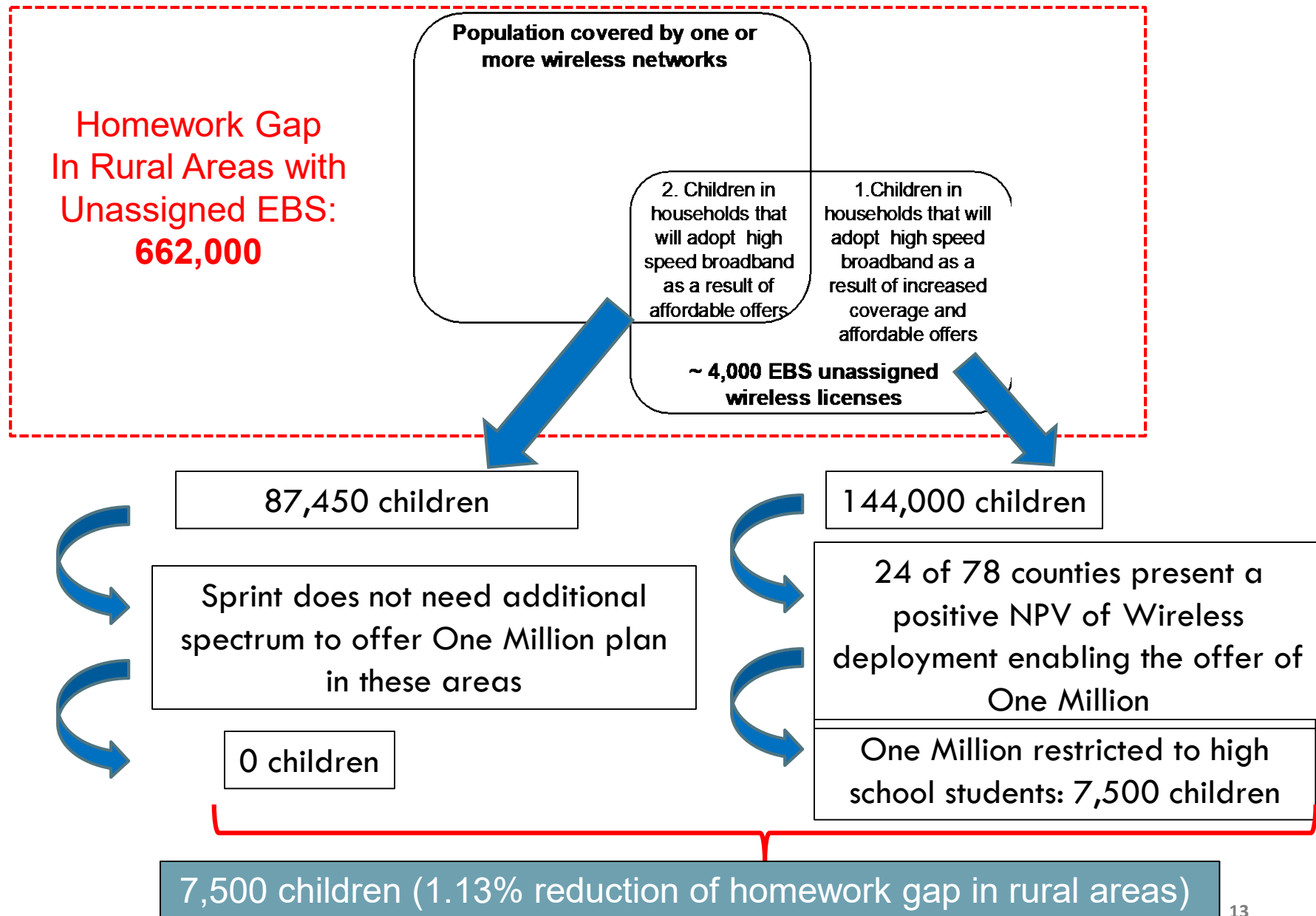
THE MODERNIZED EBS LICENSING MODEL COULD REDUCE THE RURAL HOMEWORK GAP BY ABOUT 29.6%



(*) PER SHLB proposal

REDUCTION OF THE HOMEWORK GAP:

COMMERCIAL-LED HOMEWORK GAP PROGRAMS WILL REDUCE THE RURAL HOMEWORK GAP BY 1.13%

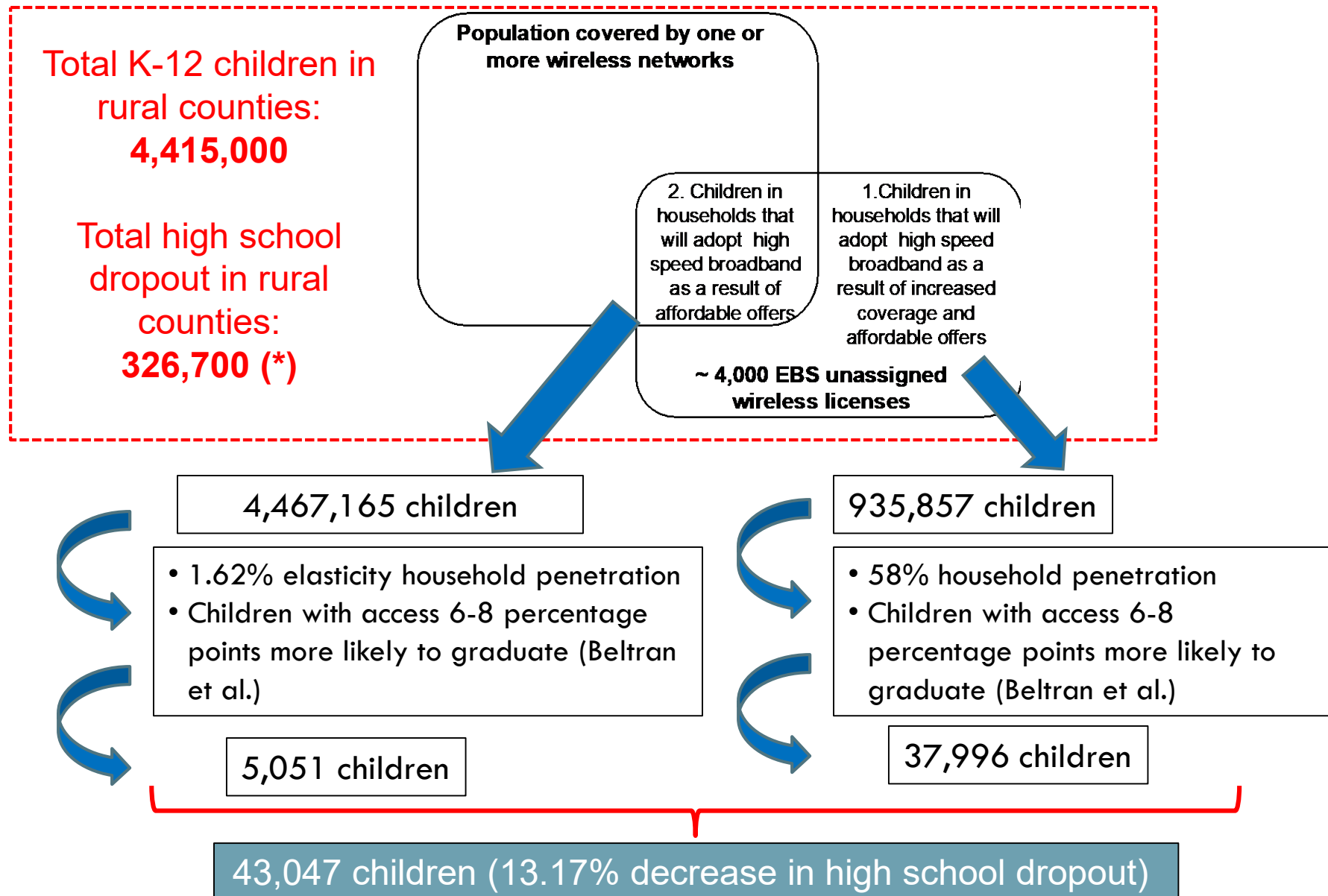


ASSESSMENT OF OF ECONOMIC AND SOCIAL VALUE

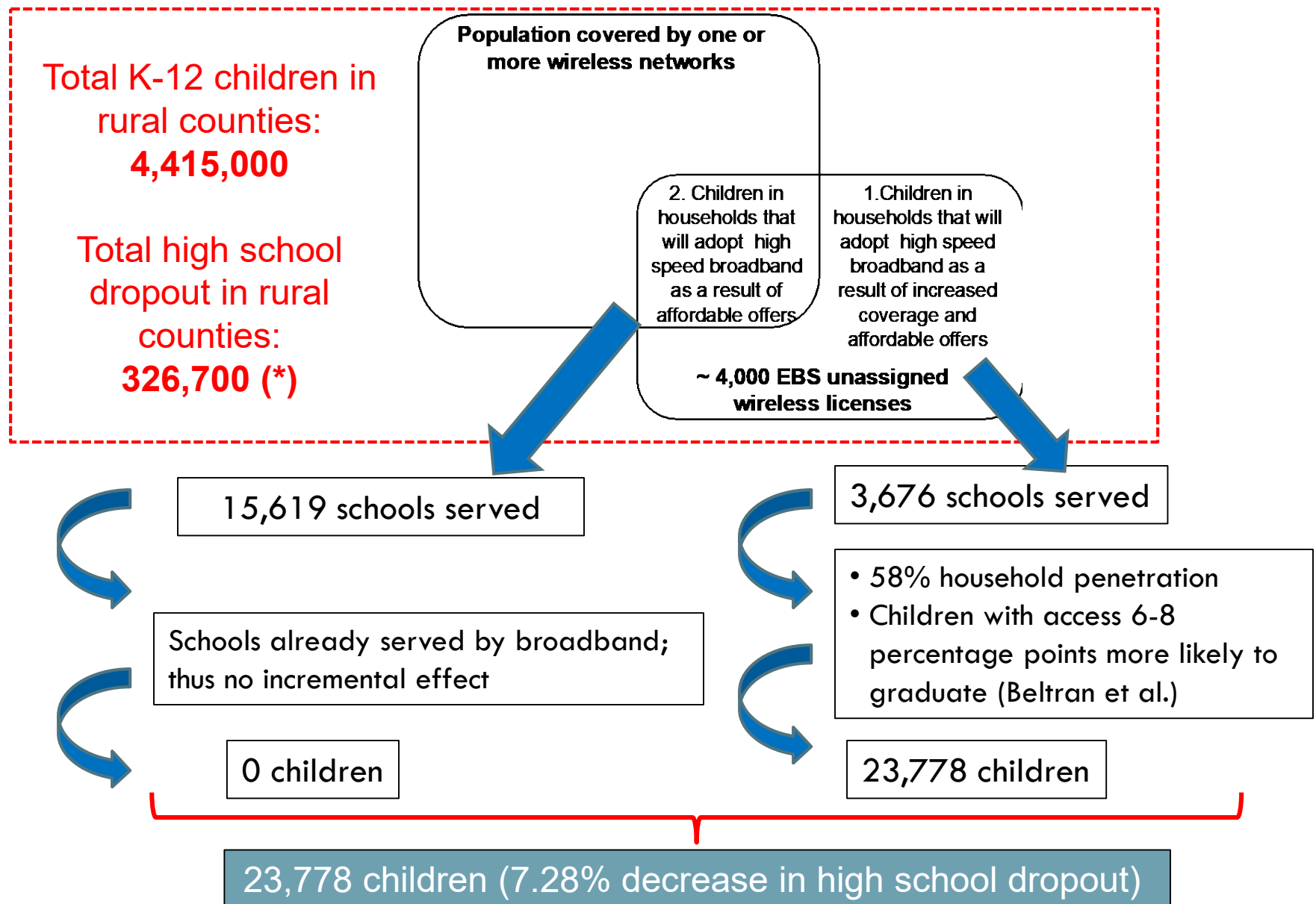
- Reduction of the digital divide
- Contribution to GDP
- Reduction of the homework gap
- Reduction of high school attrition
- Economic surplus
- Contribution to Treasury

REDUCING HIGH SCHOOL ATTRITION:

THE EBS LICENSING MODEL COULD INCREASE HIGH SCHOOL GRADUATION FOR 43,047 CHILDREN

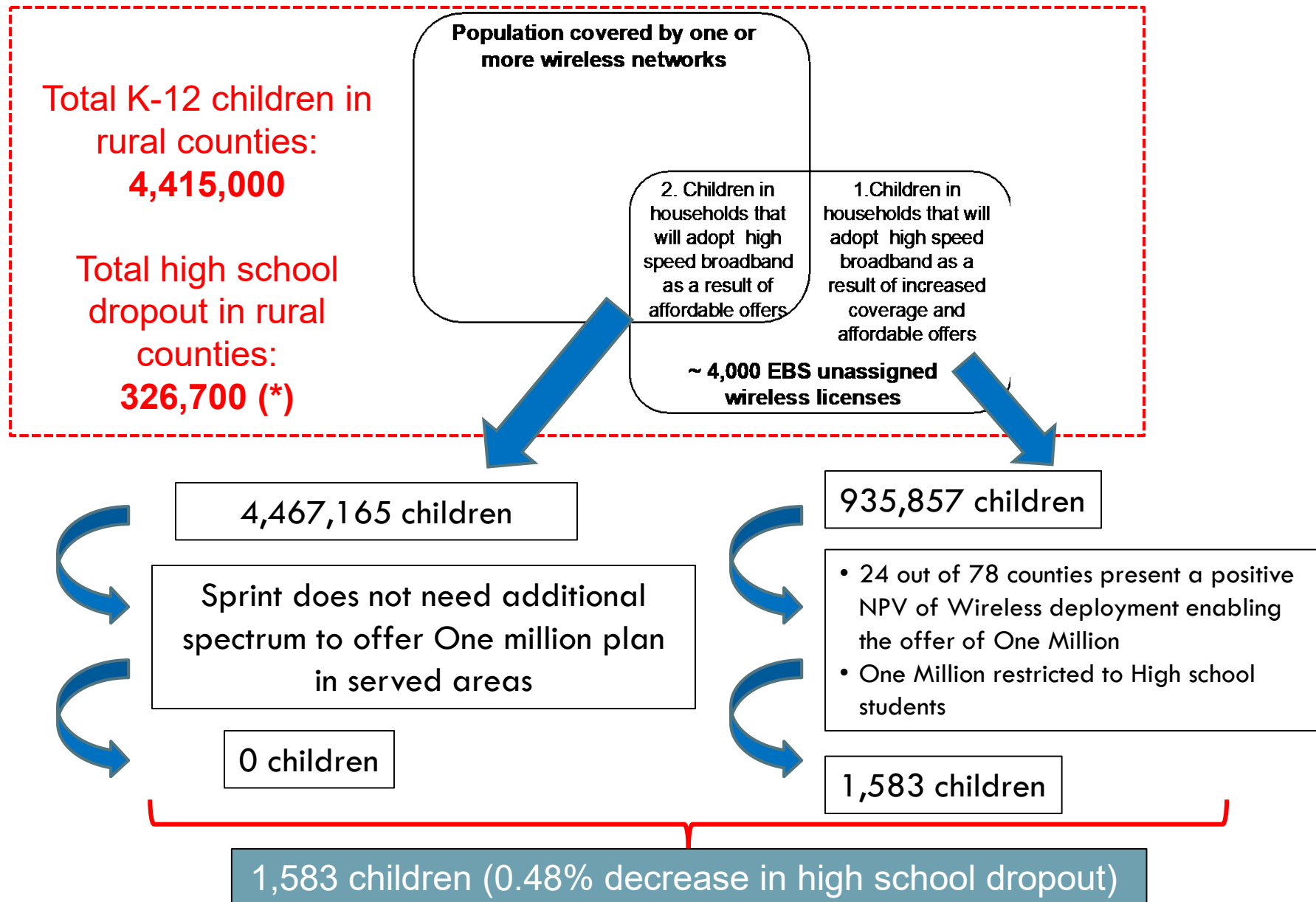


**REDUCING HIGH SCHOOL ATTRITION: THE PROVISION OF BROADBAND TO SCHOOLS
COMBINED WITH HOT SPOT LENDING COULD INCREASE GRADUATION FOR 23,778 CHILDREN**



REDUCING HIGH SCHOOL ATTRITION:

COMMERCIAL-LED PROGRAMS WILL INCREASE HIGH SCHOOL GRADUATION FOR 1,583 CHILDREN



* Total K-12 children * 7.4% High school dropout rate

ASSESSMENT OF OF ECONOMIC AND SOCIAL VALUE

- Reduction of the digital divide
- Contribution to GDP
- Reduction of the homework gap
- Reduction of high school attrition
- Economic surplus
- Contribution to Treasury

MEASURING ECONOMIC SURPLUS:

THE EBS LICENSING MODEL WILL YIELD AN ECONOMIC SURPLUS OF \$ 158.31 MILLION

Consumer surplus

Households that would pay US \$10 instead of US \$20 for broadband

- 583,457 households affected by new competition
- 85% adoption

X

Annual savings by purchasing a cheaper plan per household

- \$120

=

Annual savings
\$59.68 million

Producer surplus to anchor institutions

Institutions in areas already served by commercial operators

- K-12 schools: 12,114
- Post-secondary schools: 720
- Libraries: 2,785

X

Annual prorated broadband savings by purchasing from non-profit operator

- \$1,263

=

Five year savings
\$98.63 million

ASSESSMENT OF OF ECONOMIC AND SOCIAL VALUE

- Reduction of the digital divide
- Contribution to GDP
- Reduction of the homework gap
- Reduction of high school attrition
- Economic surplus
- Contribution to Treasury

CONTRIBUTION TO THE TREASURY:

OVERLAY AUCTION PROCEEDS OF THE EBS LICENSES IS ESTIMATED AT \$52.25 M (*)

AVAILABLE SPECTRUM

	Rural counties	Non- rural counties	Total
>100 MHz	392	38	430
99 - 70 MHz	215	75	290
69 - 50 MHz	6	5	11
49 - 30 MHz	83	62	145
29 - 10 MHz	186	122	308
<10 MHz	10	4	14
Total	892	306	1,198

AUCTION 86 is the most recent overlay auction of spectrum with similar characteristics and levels of license encumbrance. This yielded proceeds of \$0.027 per MHz-pop

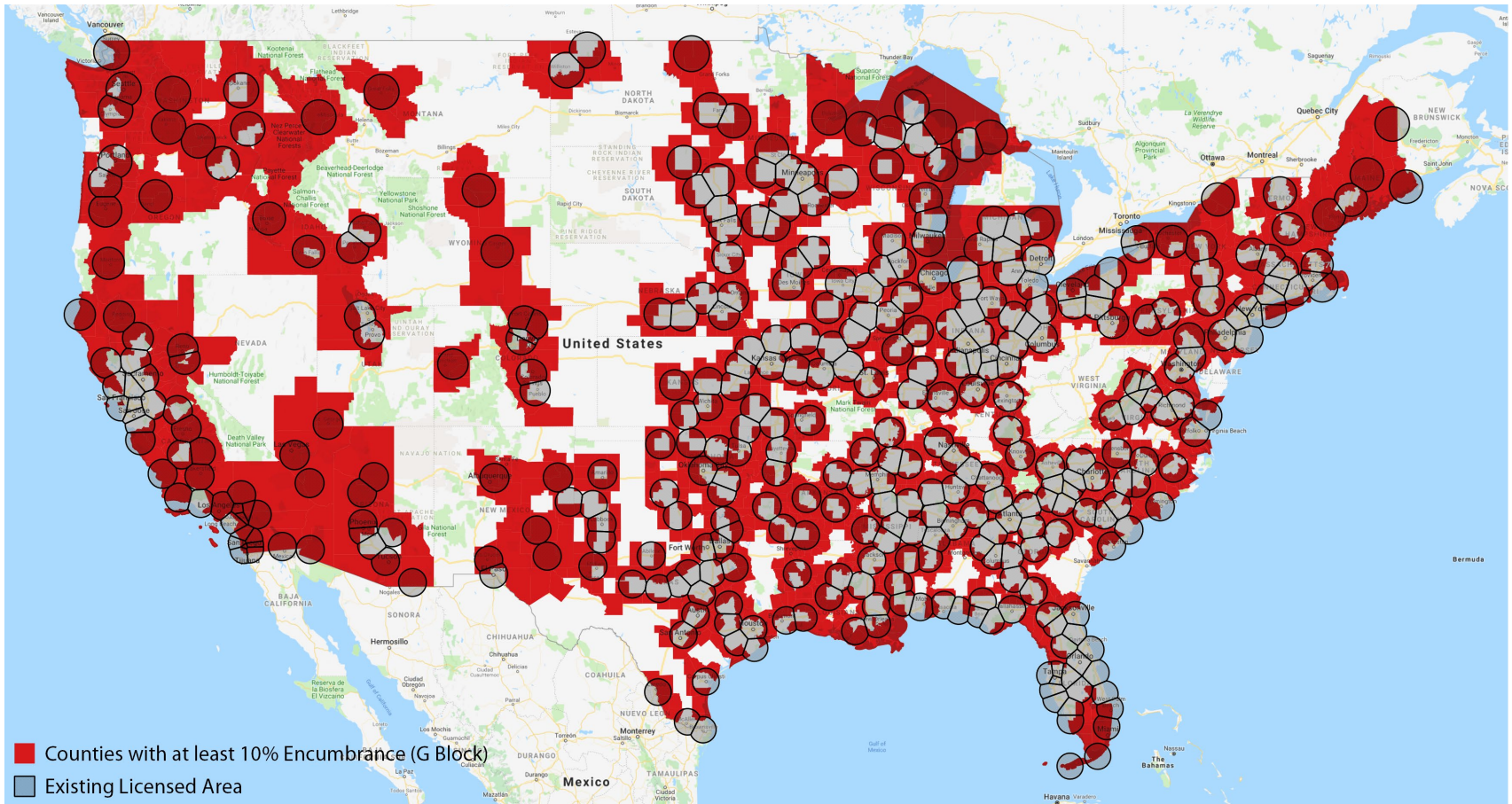
AVAILABLE MHz/POP

MHz per POP	Rural Counties	Non-rural counties	Total
Higher than 10 million	2	13	15
9,999,999 – 5,000,000	22	43	65
4,999,999– 3,000,000	41	41	82
2,999,999 – 2,000,000	67	45	112
1,999,999 – 1,000,000	173	70	243
999,999 – 800,000	65	20	85
799,999 – 600,000	103	18	121
599,999 – 400,000	111	20	131
399,999 – 200,000	165	20	185
199,999 – 100,000	86	9	95
99,999 – 50,000	46	5	51
49,999 – 30,000	7	0	7
29,999 – 20,000	3	0	3
19,999 – 10,000	1	1	2
9,999 – 5,000	0	1	1
Lower than 4,999	0	0	0
Total	892	306	1,198

(*) Even if 2.5 GHz spectrum has tripled in value since 2009, total revenue would still be only \$156.75 million

THE TYPICAL LICENSE WOULD BE HEAVILY ENCUMBERED IN ANY POTENTIAL OVERLAY AUCTION, WHICH RESULTS IN ARTIFICIALLY DEPRESSED PRICES DUE TO BIDDING ADVANTAGES FOR EXISTING INCUMBENT

LICENSE ENCUMBRANCE IN POTENTIAL EBS OVERLAY AUCTION



Source: FCC Universal Licensing System Data

COMPARATIVE ECONOMIC AND SOCIAL VALUE ANALYSIS SHOWS LICENSING EBS TO EDUCATORS AND NONPROFITS YIELDS GREATER BENEFITS THAN AUCTIONS

	EBS Licenses	Overlay Auction
Reduction of digital divide	<ul style="list-style-type: none">• 18.28% reduction in digital divide• 8,356,000 new subscribers	<ul style="list-style-type: none">• 1.49% reduction in digital divide• 682,000 new subscribers
Increase in GDP	<ul style="list-style-type: none">• \$ 70.93 billion from increased penetration	<ul style="list-style-type: none">• \$ 4.94 billion from increased penetration
Reduction of homework gap	<ul style="list-style-type: none">• 29.6 % reduction in rural homework gap• 196,000 children	<ul style="list-style-type: none">• 1.13% reduction in rural homework gap• 7,500 children
Social effects	<ul style="list-style-type: none">• 66,825 additional children graduating from high school	<ul style="list-style-type: none">• 1,583 additional children graduating from high school
Economic surplus	<ul style="list-style-type: none">• Consumer surplus from affordable offers: \$59.68 million• Producer surplus for anchor institutions: \$98.63 million	<ul style="list-style-type: none">• Consumer surplus from affordable offers: \$0• Producer surplus for anchor institutions: \$0
Contribution to Treasury	<ul style="list-style-type: none">• \$ 0	<ul style="list-style-type: none">• \$ 52.25 million

WHY IS THE DIFFERENCE IN SOCIAL AND ECONOMIC VALUE BETWEEN OPTIONS SO SIGNIFICANT?

- Wireless broadband deployment economics (not a lack of available commercial spectrum) constrain the development of network in rural, unserved counties.
 - Additional spectrum will not change the economic constraints that disincentivize investment in sparsely populated areas
- Commercial wireless carriers do not have an offer focused on increasing adoption by low income population [especially in rural areas]
- Commercial-led homework gap offers (e.g. Sprint's One Million plan) have limitations that comparable EBS offers do not (e.g. data caps and available only to high school students)
- There is no commercial carrier offer comparable to EBS offers like those available from Mobile Beacon and Mobile Citizen, which focus on affordable service to anchor institutions (schools, libraries, nonprofits) and their users (such as hotspot lending models)
- Proceeds of an overlay auction are limited due to significant encumbrances and the majority of unencumbered spectrum is limited to rural licenses, which generally yield lower proceeds than bids for spectrum in more populated areas

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