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EXHIBITS PRESENTED BEFORE THE

FEDERAL COMMUNICATIONS COMMISSION

On Docket No. 5060, November 14, 1938

COLUMBIA BROADCASTING SYSTEM

ENGINEERING DEPARTMENT

Maps & Exhibits

presented by the

ENGINEERING DEPARTMENT

of the

COLUMBIA BROADCASTING SYSTEM

In re: Order No. 37, Docket No. 5060

before the

FEDERAL COMMUNICATIONS COMMISSION

Nov. 14th, 1938, et seq.

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FOREWORD

The following maps have been prepared by the Engineering Department of the Columbia Broadcasting System in response to order No. 37 of the Federal Communications Commission. The service areas have been defined in accordance with the Commission's proposed Standards of Good Engineering Practice, which specify the type of signal technically desirable under various receiving conditions. Maps of audience response may depart widely from those based solely on engineering standards.

CBS station affiliations were taken as of October 1, 1938, and the power, frequency, antenna design and operating hours of each station include changes authorized by construction permits issued up to that date. Field intensity contours of 58 stations were based upon actual surveys. The coverage of the remaining stations was estimated on the basis of the best engineering information available. Assumptions as to antenna efficiency were made in accordance with the Commission's minimum radiation requirements for the class of station involved. Nighttime interference to a shared-channel station was assumed to begin at a point where its ground wave was 20 times the root-mean-square of other signals on the same frequency. Service within the United States by Canadian affiliates has not been shown, and the interference of Mexican and Cuban stations was not taken into account because of the frequent changes in their assignments.

The distance to the nighttime fading-wall of a clear-channel station, and the extent of the rapid-fading zone were determined from skywave data obtained by the Columbia Broadcasting System in cooperation with the U. S. Bureau of Standards, and from a consideration of the expected radiation pattern of each station's antenna. All other calculations involving skywave transmission were based on the Commission's second-hour-after-sunset curves for 1935 transmission conditions.

CBS STATION GROUPINGS

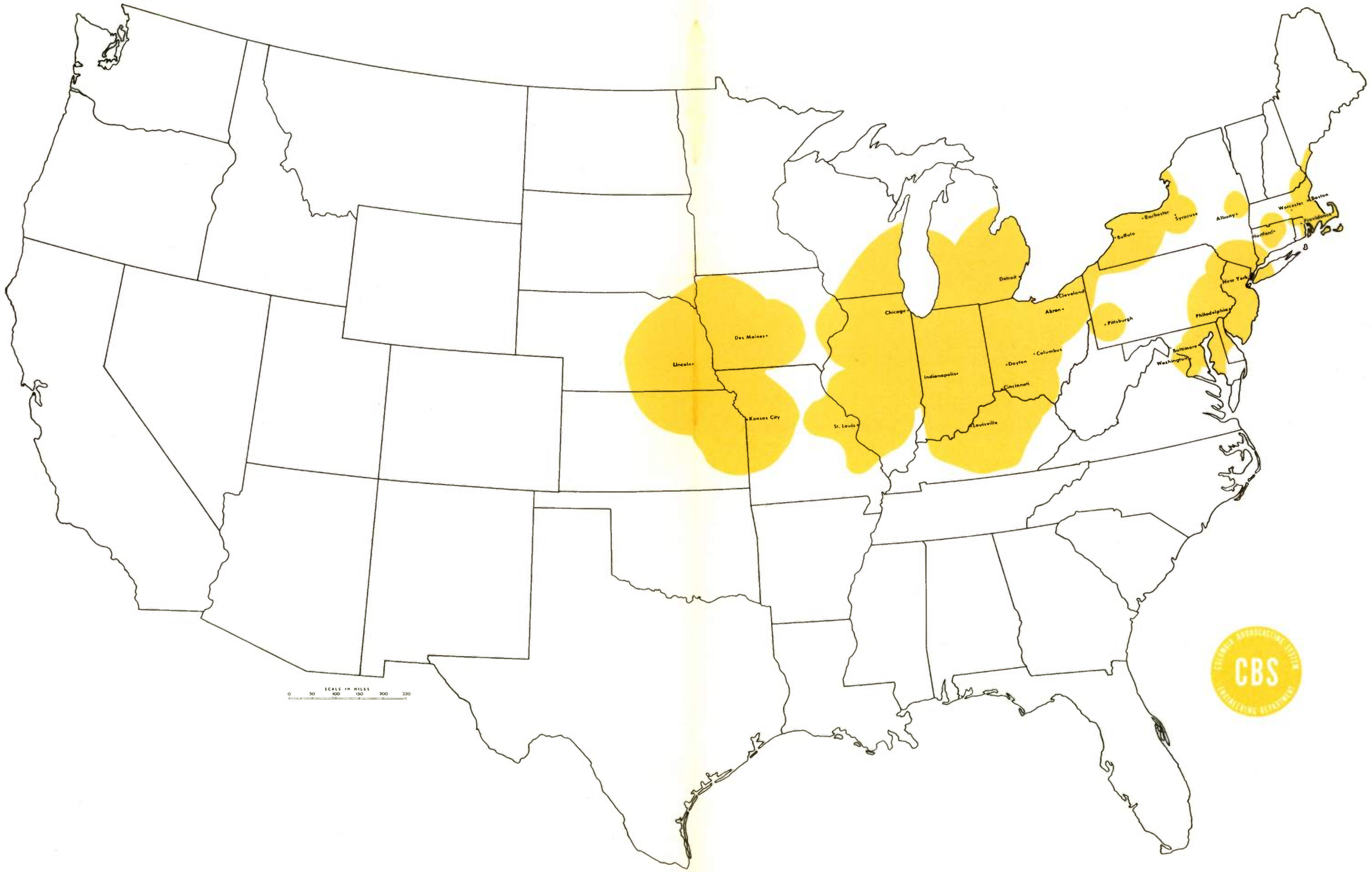
The maps which follow in this book show service areas for various combinations of CBS stations. Only stations within continental U.S.A. were considered. Station groupings for the "basic", "average" and "complete" hook-ups are shown in the table below. (Rules are for Visual Convenience Only)

CITY	DAY AND NIGHT BASIC	DAY AVERAGE	NIGHT AVERAGE	DAY COMPLETE	NIGHT COMPLETE
TOTAL STATIONS:	26	37	66	110	108
Akron	WADC		WADC	WADC	WADC
Albany	WOKO	WOKO	WOKO	WOKO	WOKO
Albuquerque				KGGM	KGGM
Anderson				WAIM	WAIM
Atlanta			WGST	WGST	WGST
Atlantic City				WPG	WPG
Augusta				WRDW	WRDW
Austin			KNOW	KNOW	KNOW
Baltimore	WCAO	WCAO	WCAO	WCAO	WCAO
Bangor				WLBZ	WLBZ
Binghamton				WNBF	WNBF
Birmingham			WAPI	WAPI	WAPI
Boston	WEEI	WEEI	WEEI	WEEI	WEEI
Buffalo	WGR	WGR	WGR	WGR	WGR
Charleston, W. Va.				WCHS	WCHS
Charlotte		WBT	WBT	WBT	WBT
Chattanooga				WDOD	WDOD
Chicago	WBBM	WBBM	WBBM	WBBM	WBBM
Cincinnati	WKRC	WKRC	WKRC	WKRC	WKRC
Cleveland	WGAR	WGAR	WGAR	WGAR	WGAR
Colorado Springs				KVOR	KVOR
Columbus	WBNS		WBNS	WBNS	WBNS
Dallas			KRLD	KRLD	KRLD
Davenport			WOC	WOC	WOC
Dayton	WHIO		WHIO	WHIO	WHIO
Denver		KLZ	KLZ	KLZ	KLZ
Des Moines	KRNT	KRNT	KRNT	KRNT	KRNT
Detroit	WJR	WJR	WJR	WJR	WJR
Dubuque				WKBB	WKBB
Duluth				KDAL	KDAL
Durham				WDNC	WDNC
Elmira				WESG	
Evansville				WEOA	WEOA
Fairmont				WMMN	WMMN
Fresno				KARM	KARM
Green Bay				WTAQ	WTAQ
Great Falls				KFBB	KFBB
Greensboro				WBIG	WBIG
Harrisburg			WHP	WHP	WHP
Hartford	WDRC	WDRC	WDRC	WDRC	WDRC
Hibbing, Minn.				WMFG	WMFG
Houston			KTRH	KTRH	KTRH
Indianapolis	WFBM	WFBM	WFBM	WFBM	WFBM
Jacksonville			WMBR	WMBR	WMBR
Kansas City	KMBC	KMBC	KMBC	KMBC	KMBC
Knoxville			WNOX	WNOX	WNOX
La Crosse				WKBH	WKBH
Lincoln	KFAB	KFAB	KFAB	KFAB	KFAB
Little Rock			KLRA	KLRA	KLRA
Los Angeles		KNX	KNX	KNX	KNX

CBS STATION GROUPINGS (CONTINUED)

CITY	DAY AND NIGHT BASIC	DAY AVERAGE	NIGHT AVERAGE	DAY COMPLETE	NIGHT COMPLETE
TOTAL STATIONS:	26	37	66	110	108
Louisville	WHAS	WHAS	WHAS	WHAS	WHAS
Macon				WMAZ	WMAZ
Mason City				KGLO	KGLO
Memphis			WREC	WREC	WREC
Meridian				WCOC	WCOC
Miami			WQAM	WQAM	WQAM
Milwaukee		WISN	WISN	WISN	WISN
Minneapolis		WCCO	WCCO	WCCO	WCCO
Missoula				KGVO	KGVO
Montgomery				WSFA	WSFA
Nashville			WLAC	WLAC	WLAC
New Orleans			WWL	WWL	WWL
New York	WABC	WABC	WABC	WABC	WABC
Oklahoma City		KOMA	KOMA	KOMA	KOMA
Orlando			WDBO	WDBO	WDBO
Parkersburg				WPAR	WPAR
Pensacola				WCOA	WCOA
Peoria			WMBD	WMBD	WMBD
Philadelphia	WCAU	WCAU	WCAU	WCAU	WCAU
Phoenix				KOY	KOY
Pittsburgh	WJAS	WJAS	WJAS	WJAS	WJAS
Pittsfield				WBRK	WBRK
Portland, Maine				WGAN	WGAN
Portland, Oregon		KOIN	KOIN	KOIN	KOIN
Providence	WPRO	WPRO	WPRO	WPRO	WPRO
Reno				KOH	KOH
Richmond		WRVA	WRVA	WRVA	WRVA
Roanoke			WDBJ	WDBJ	WDBJ
Rochester	WHEC	WHEC	WHEC	WHEC	WHEC
Sacramento				KROY	
St. Louis	KMOX	KMOX	KMOX	KMOX	KMOX
Salt Lake City		KSL	KSL	KSL	KSL
San Antonio			KTSA	KTSA	KTSA
San Francisco		KSFO	KSFO	KSFO	KSFO
Savannah			WTOC	WTOC	WTOC
Scranton				WGBI	WGBI
Seattle		KIRO	KIRO	KIRO	KIRO
Shreveport			KWKH	KWKH	KWKH
Sioux City				KSCJ	KSCJ
South Bend				WSBT	WSBT
Spokane		KFPY	KFPY	KFPY	KFPY
Springfield, Mass.		WMAS	WMAS	WMAS	WMAS
Springfield, Vt.				WNBX	WNBX
Syracuse	WFBL	WFBL	WFBL	WFBL	WFBL
Tacoma		KVI	KVI	KVI	KVI
Tampa			WDAE	WDAE	WDAE
Topeka			WIBW	WIBW	WIBW
Tucson				KGAR	KGAR
Tulsa			KTUL	KTUL	KTUL
Utica				WIBX	WIBX
Virginia, Minn.				WHLB	WHLB
Waco				WACO	WACO
Washington	WJSV	WJSV	WJSV	WJSV	WJSV
West Palm Beach			WJNO	WJNO	WJNO
Wheeling				WWVA	WWVA
Wichita			KFH	KFH	KFH
Winston-Salem				WSJS	WSJS
Worcester	WORC	WORC	WORC	WORC	WORC
Yankton			WNAX	WNAX	WNAX
Youngstown				WKBN	WKBN

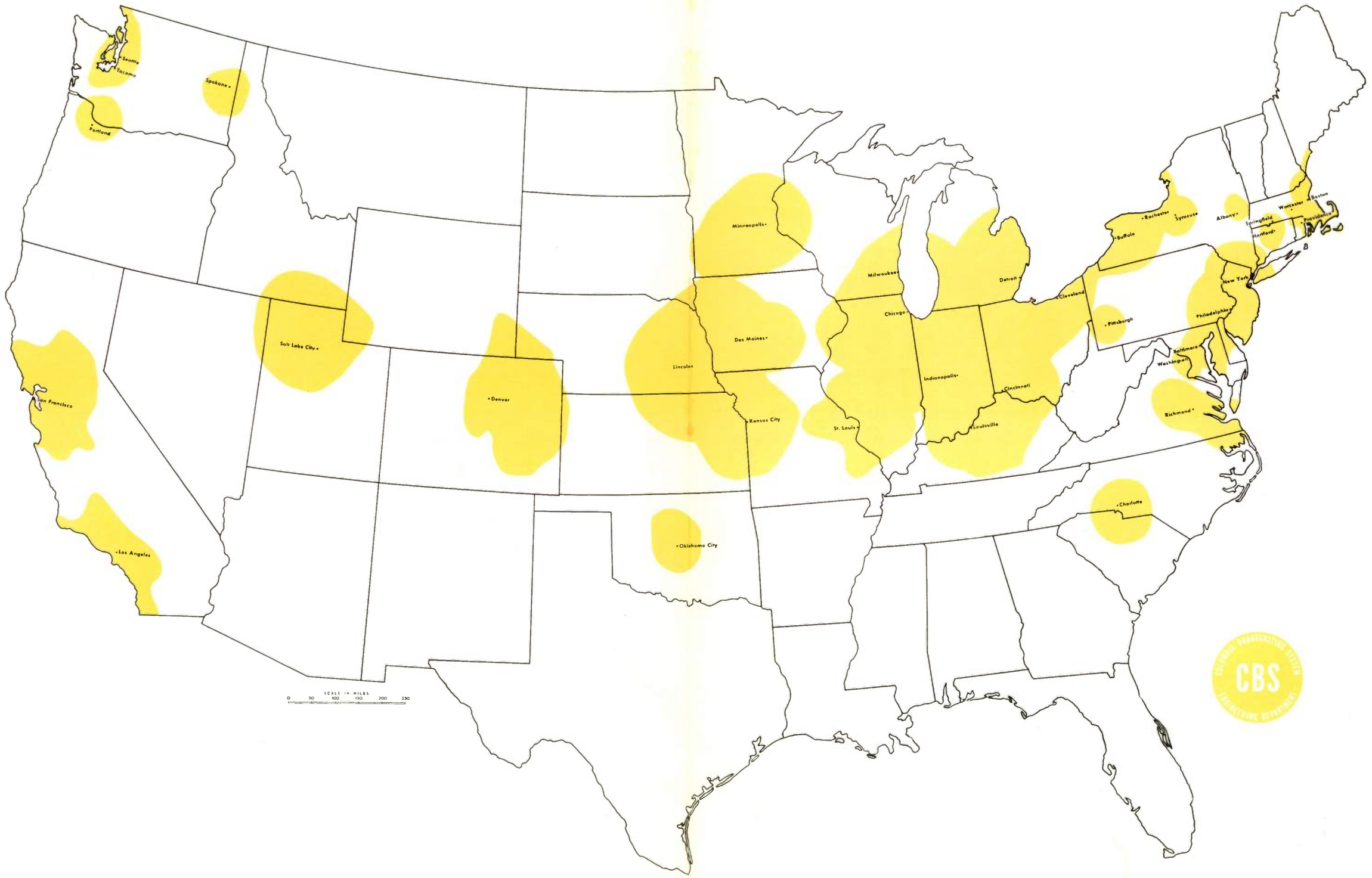
EXHIBIT E I: Daytime 0.5 Millivolt Areas – CBS BASIC NETWORK



DAYTIME 0.5 MILLIVOLT
AREAS—CBS BASIC NETWORK

E I

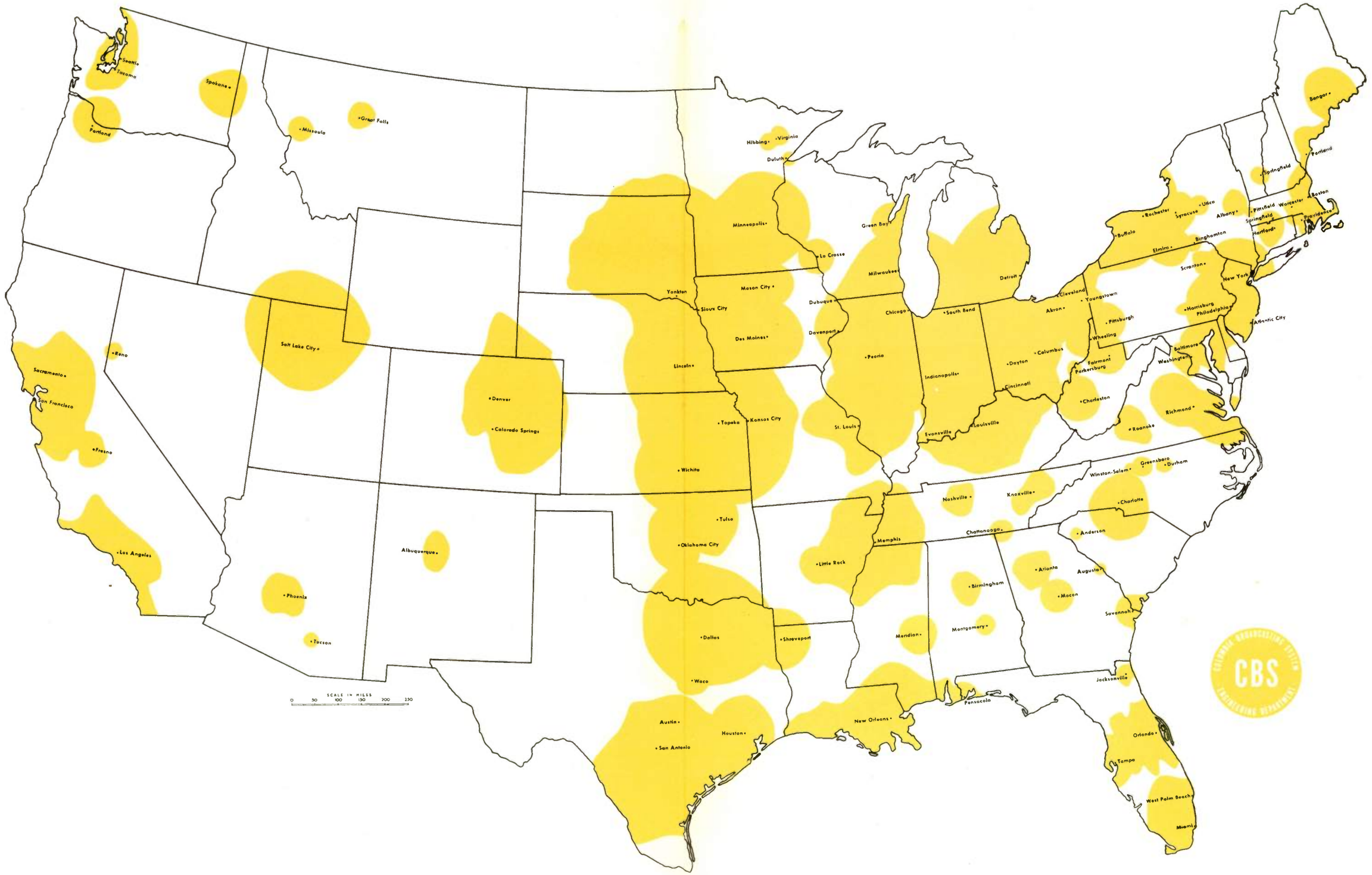
EXHIBIT E 2: Daytime 0.5 Millivolt Areas – CBS AVERAGE NETWORK



DAYTIME 0.5 MILLIVOLT AREAS
—CBS AVERAGE NETWORK

E 2

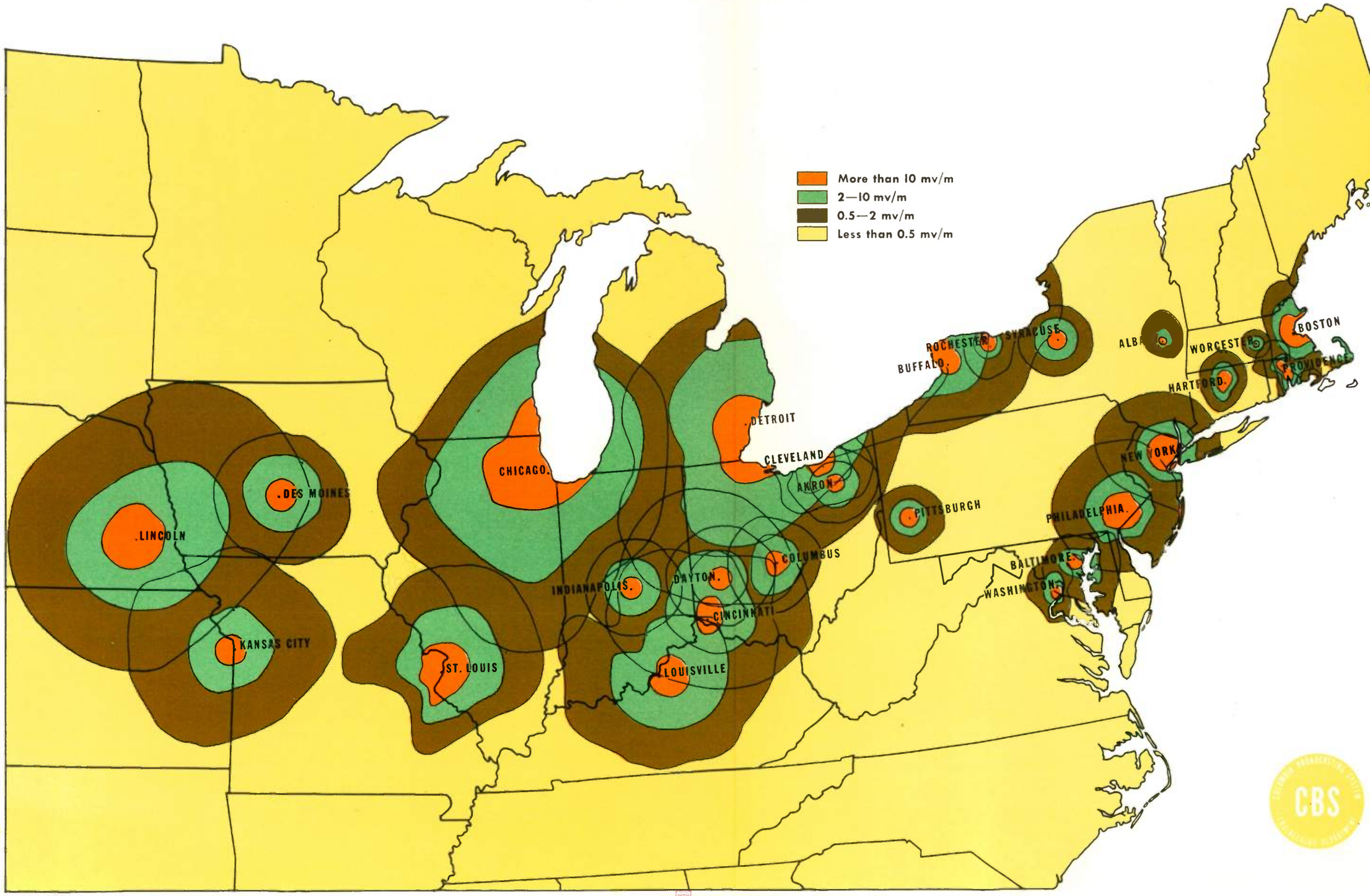
EXHIBIT E 3: Daytime 0.5 Millivolt Areas – CBS COMPLETE NETWORK



DAYTIME 0.5 MILLIVOLT AREAS
—CBS COMPLETE NETWORK

E 3

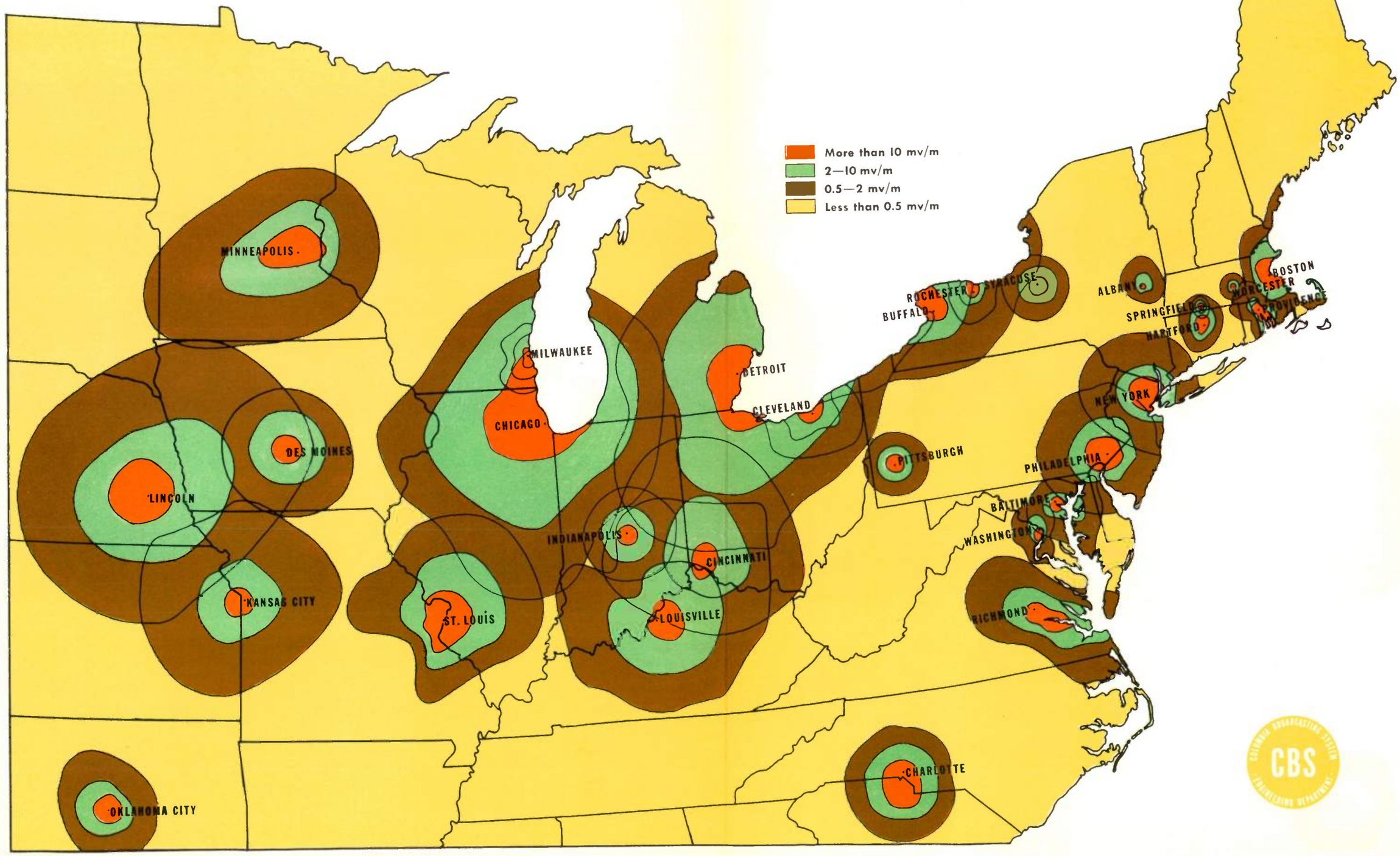
EXHIBIT E 4: Daytime Groundwave Service in Northeastern United States, in Terms of Signal Strength Levels — CBS BASIC NETWORK



E 4

DAYTIME GROUNDWAVE SERVICE
IN NORTHEASTERN UNITED STATES,
IN TERMS OF SIGNAL STRENGTH
LEVELS—CBS BASIC NETWORK.

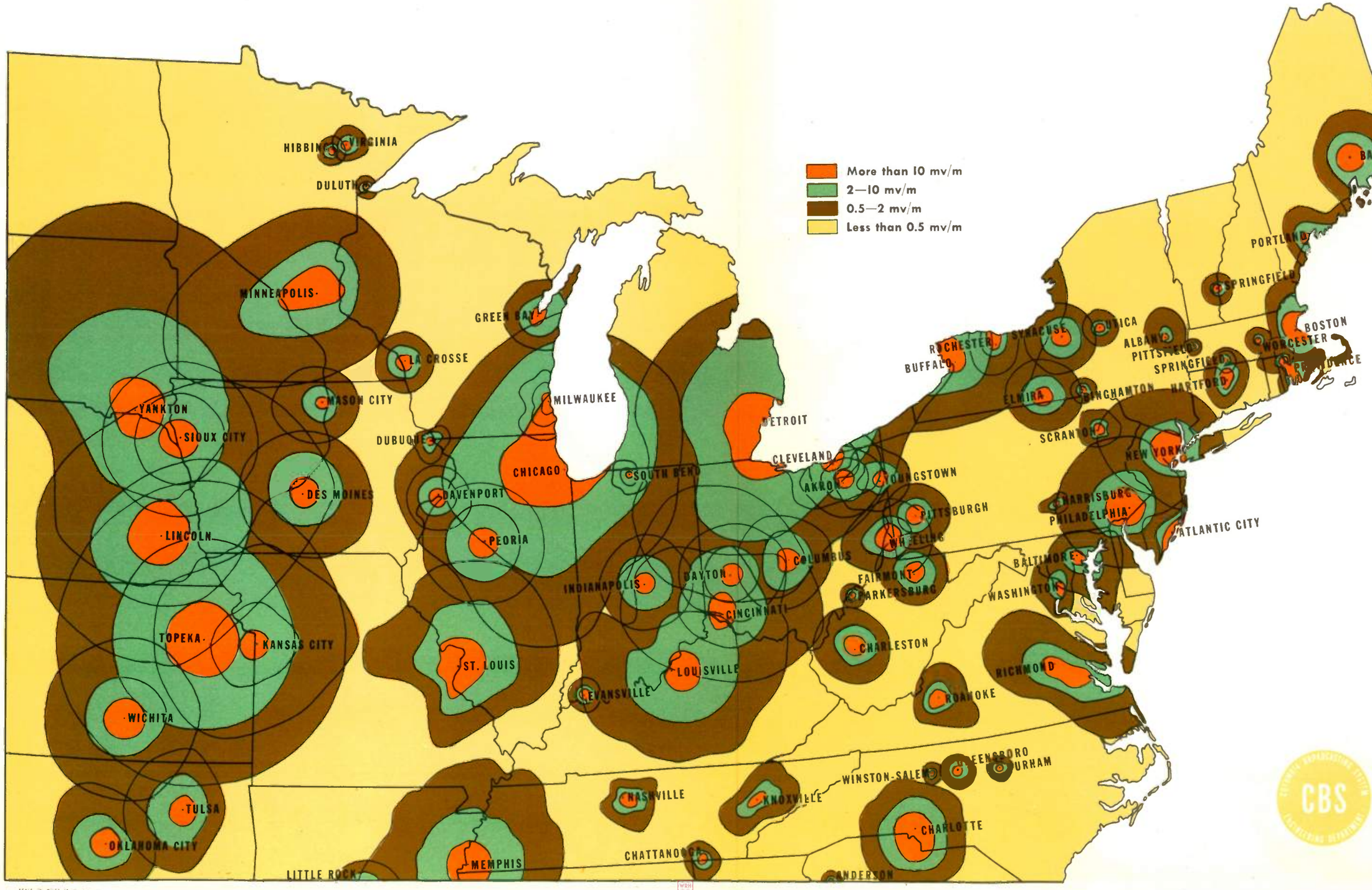
EXHIBIT E 5: Daytime Groundwave Service in Northeastern United States, in Terms of Signal Strength Levels—CBS AVERAGE NETWORK



DAYTIME GROUNDWAVE SERVICE
IN NORTHEASTERN UNITED STATES,
IN TERMS OF SIGNAL STRENGTH
LEVELS—CBS AVERAGE NETWORK.

E 5

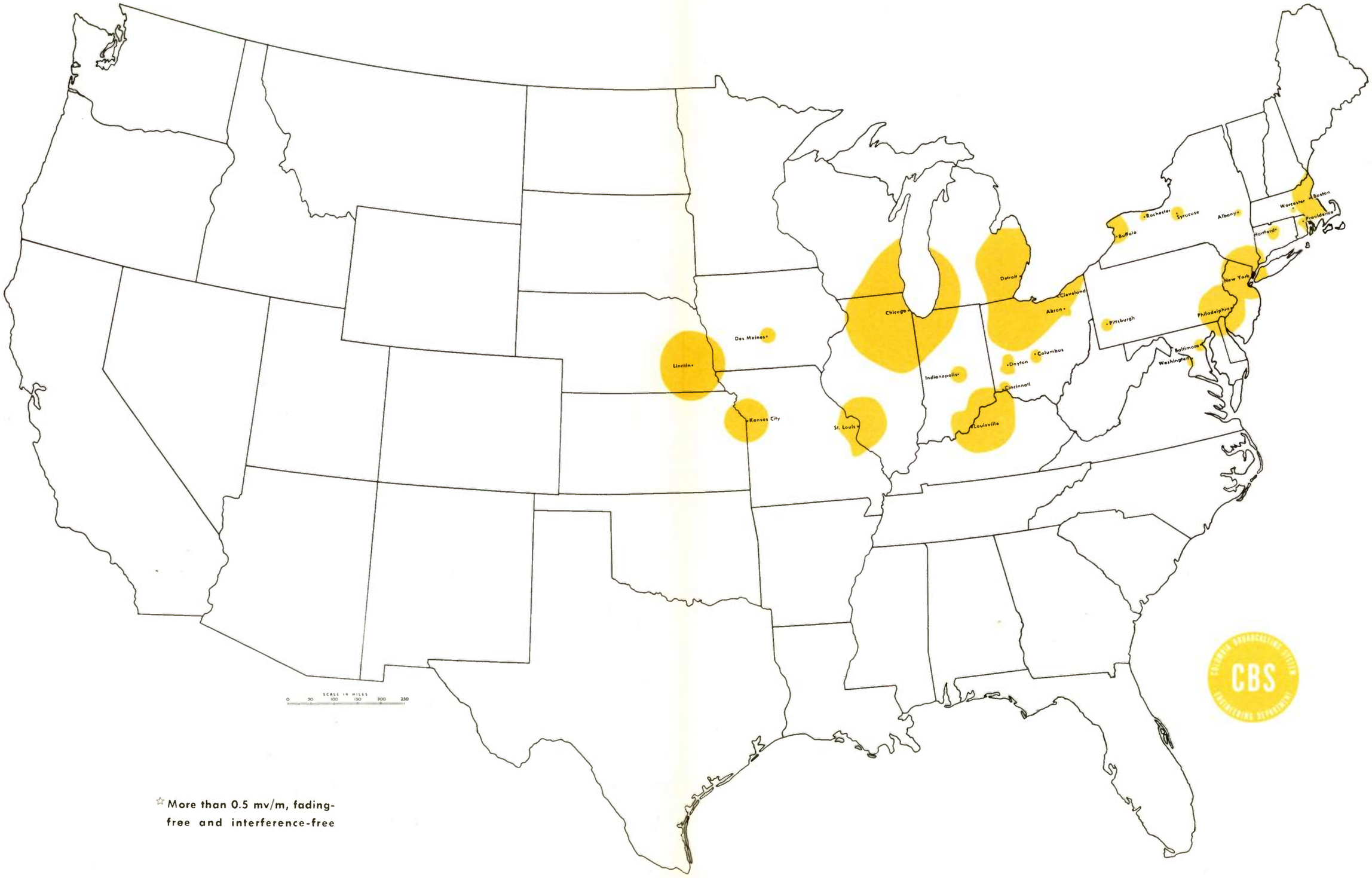
EXHIBIT E 6: Daytime Groundwave Service in Northeastern United States, in Terms of Signal Strength Levels—CBS COMPLETE NETWORK



DAYTIME GROUNDWAVE SERVICE
IN NORTHEASTERN UNITED STATES,
IN TERMS OF SIGNAL STRENGTH
LEVELS — CBS COMPLETE NETWORK.

E 6

EXHIBIT E 7: Nighttime Groundwave Service Areas☆ CBS BASIC NETWORK



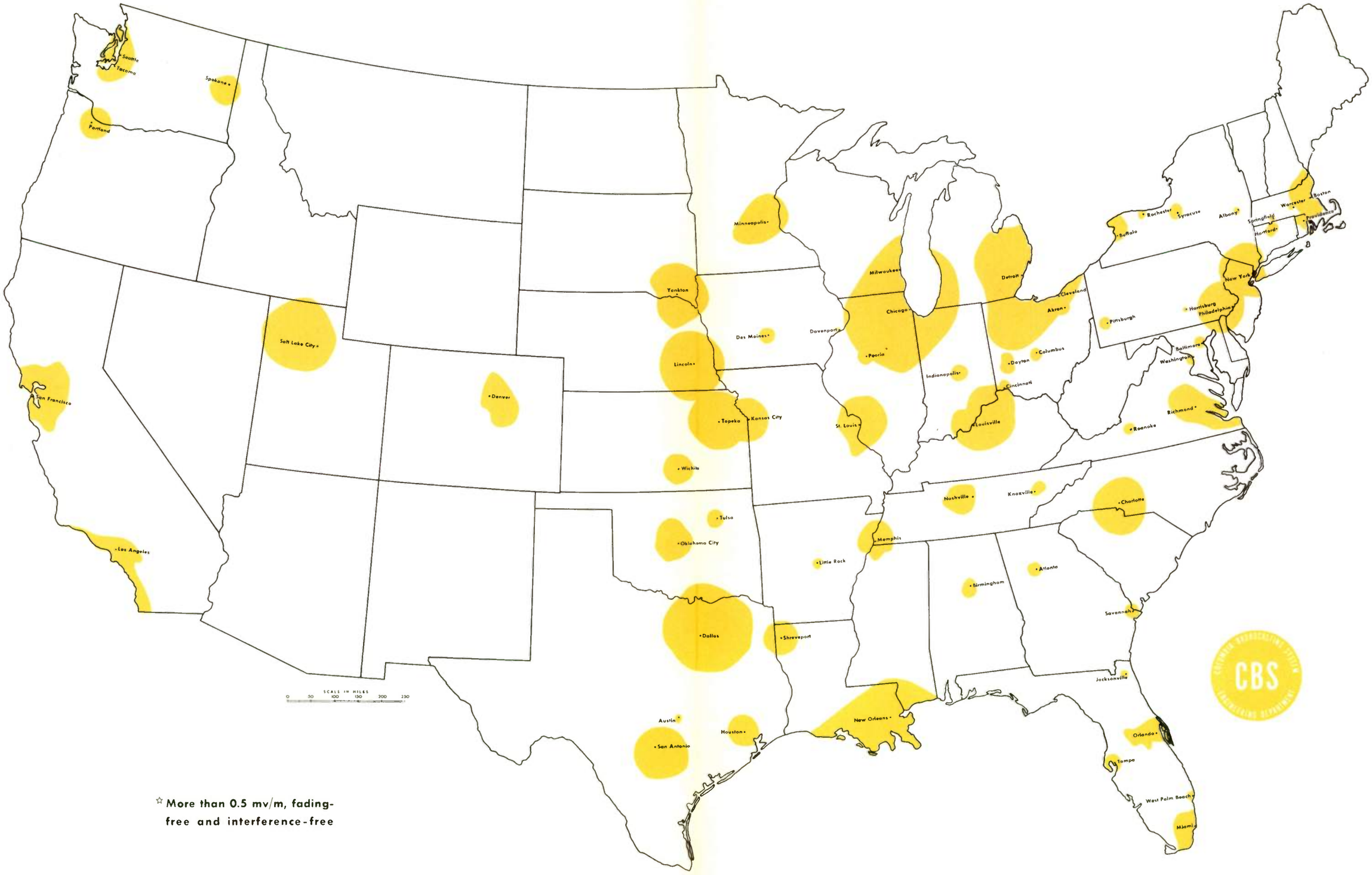
☆ More than 0.5 mv/m, fading-free and interference-free

CBS

NIGHTTIME GROUNDWAVE SERVICE
AREAS—CBS BASIC NETWORK

E 7

EXHIBIT E 8: Nighttime Groundwave Service Areas☆ CBS AVERAGE NETWORK

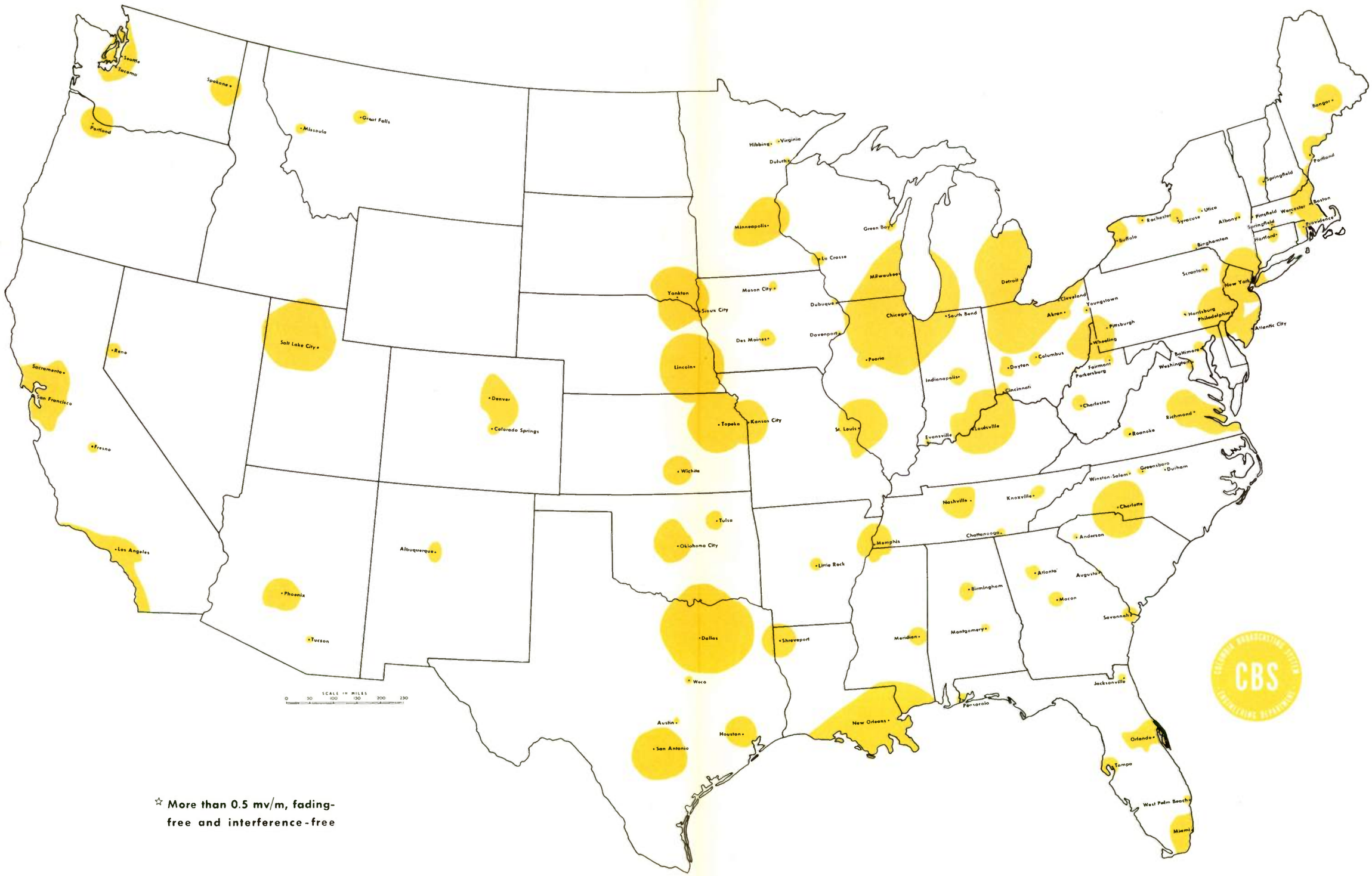


☆ More than 0.5 mv/m, fading-free and interference-free

NIGHTTIME GROUNDWAVE SERVICE
AREAS—CBS AVERAGE NETWORK

E 8

EXHIBIT E 9: Nighttime Groundwave Service Areas☆ CBS COMPLETE NETWORK

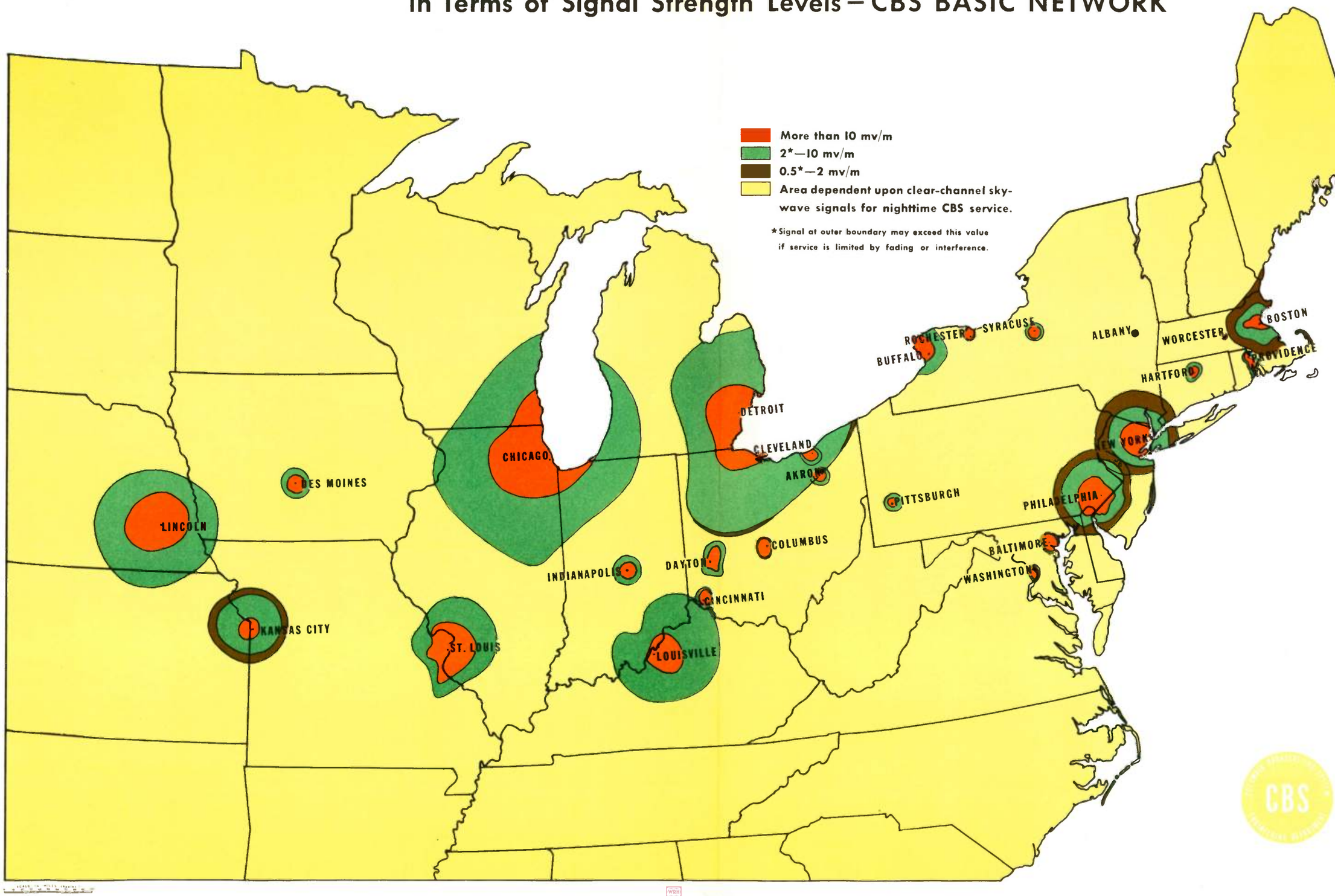


☆ More than 0.5 mv/m, fading-free and interference-free

NIGHTTIME GROUNDWAVE SERVICE
AREAS—CBS COMPLETE NETWORK

E 9

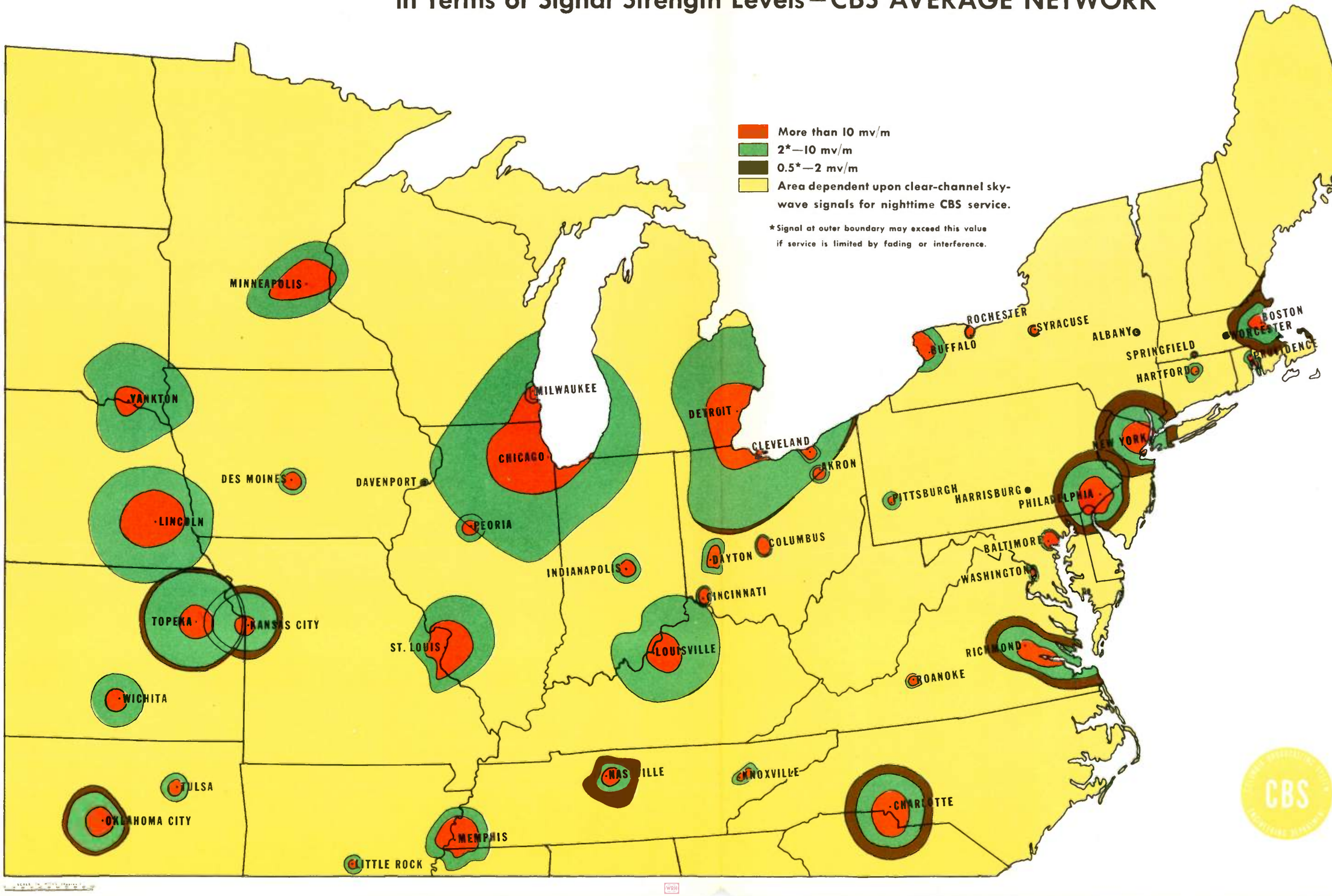
EXHIBIT E 10: Nighttime Groundwave Service in Northeastern United States, in Terms of Signal Strength Levels – CBS BASIC NETWORK



E 10

NIGHTTIME GROUNDWAVE SERVICE
IN NORTHEASTERN UNITED STATES,
IN TERMS OF SIGNAL STRENGTH
LEVELS — CBS BASIC NETWORK.

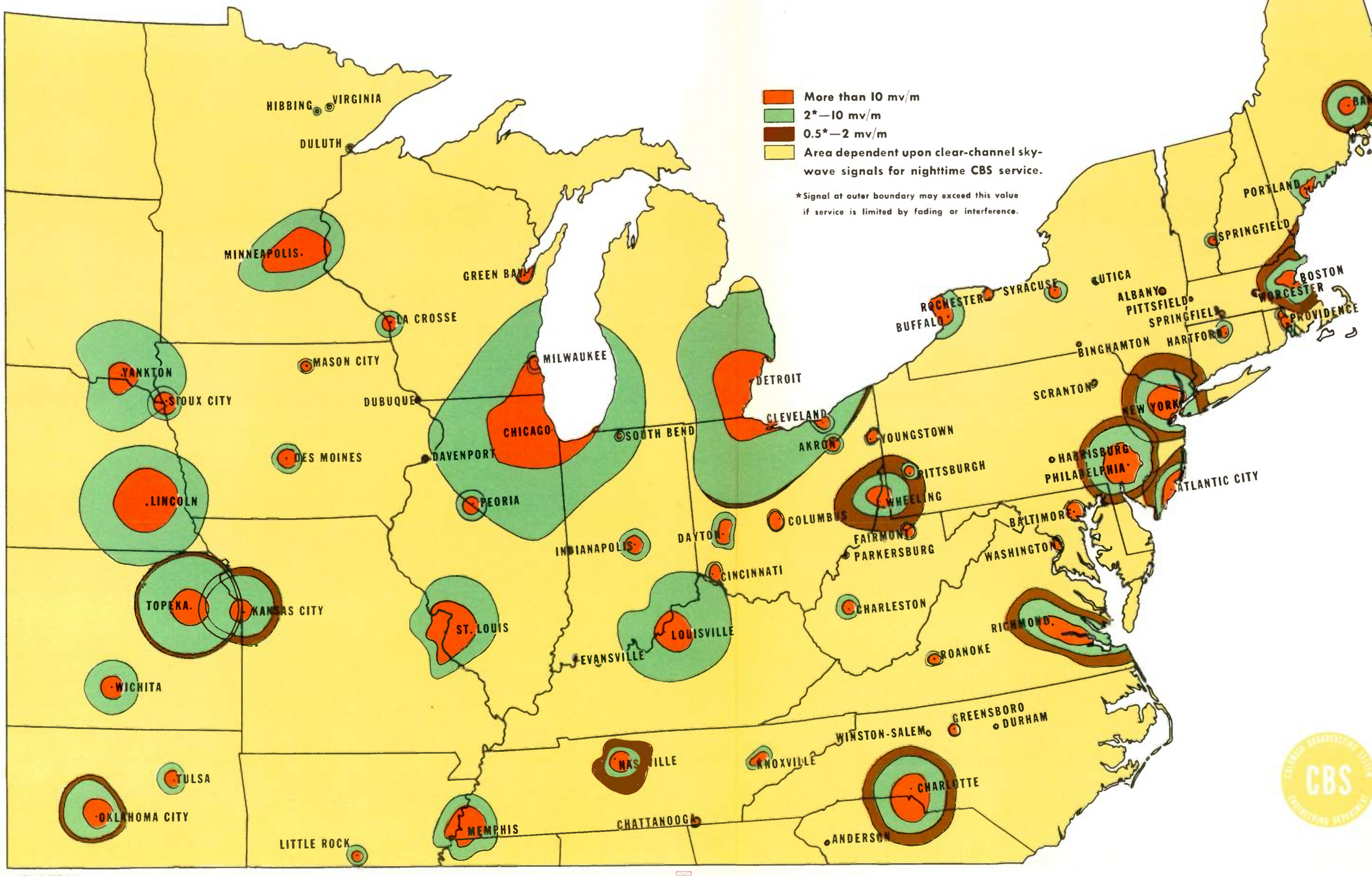
EXHIBIT E II: Nighttime Groundwave Service in Northeastern United States, in Terms of Signal Strength Levels—CBS AVERAGE NETWORK



E II

NIGHTTIME GROUNDWAVE SERVICE
IN NORTHEASTERN UNITED STATES,
IN TERMS OF SIGNAL STRENGTH
LEVELS—CBS AVERAGE NETWORK.

EXHIBIT E 12: Nighttime Groundwave Service in Northeastern United States, in Terms of Signal Strength Levels—CBS COMPLETE NETWORK

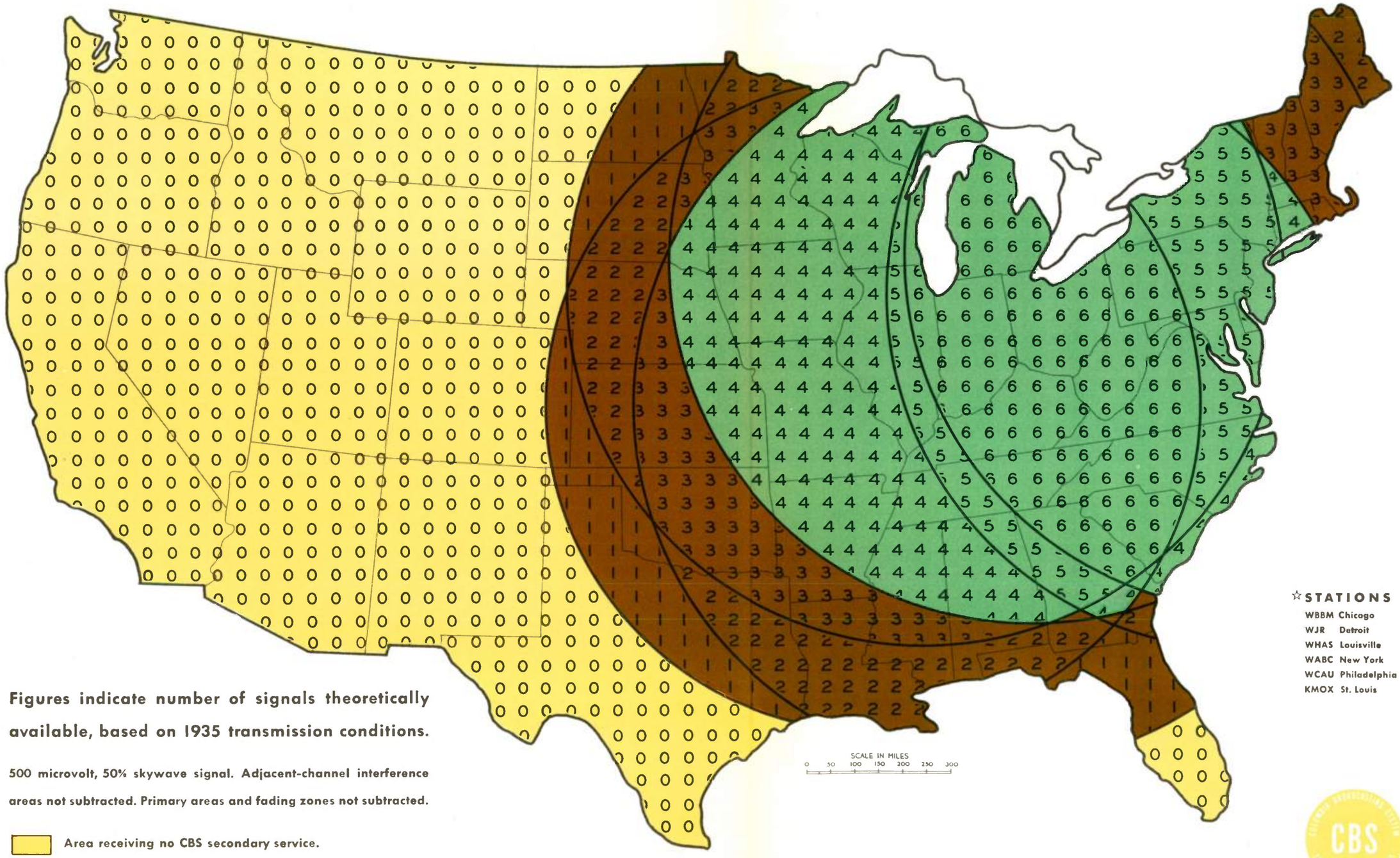


E 12

NIGHTTIME GROUNDWAVE SERVICE IN NORTHEASTERN UNITED STATES, IN TERMS OF SIGNAL STRENGTH LEVELS — CBS COMPLETE NETWORK.

EXHIBIT E 13: Secondary coverage from 50 kw stations☆

CBS BASIC NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

500 microvolt, 50% skywave signal. Adjacent-channel interference areas not subtracted. Primary areas and fading zones not subtracted.

- Area receiving no CBS secondary service.
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

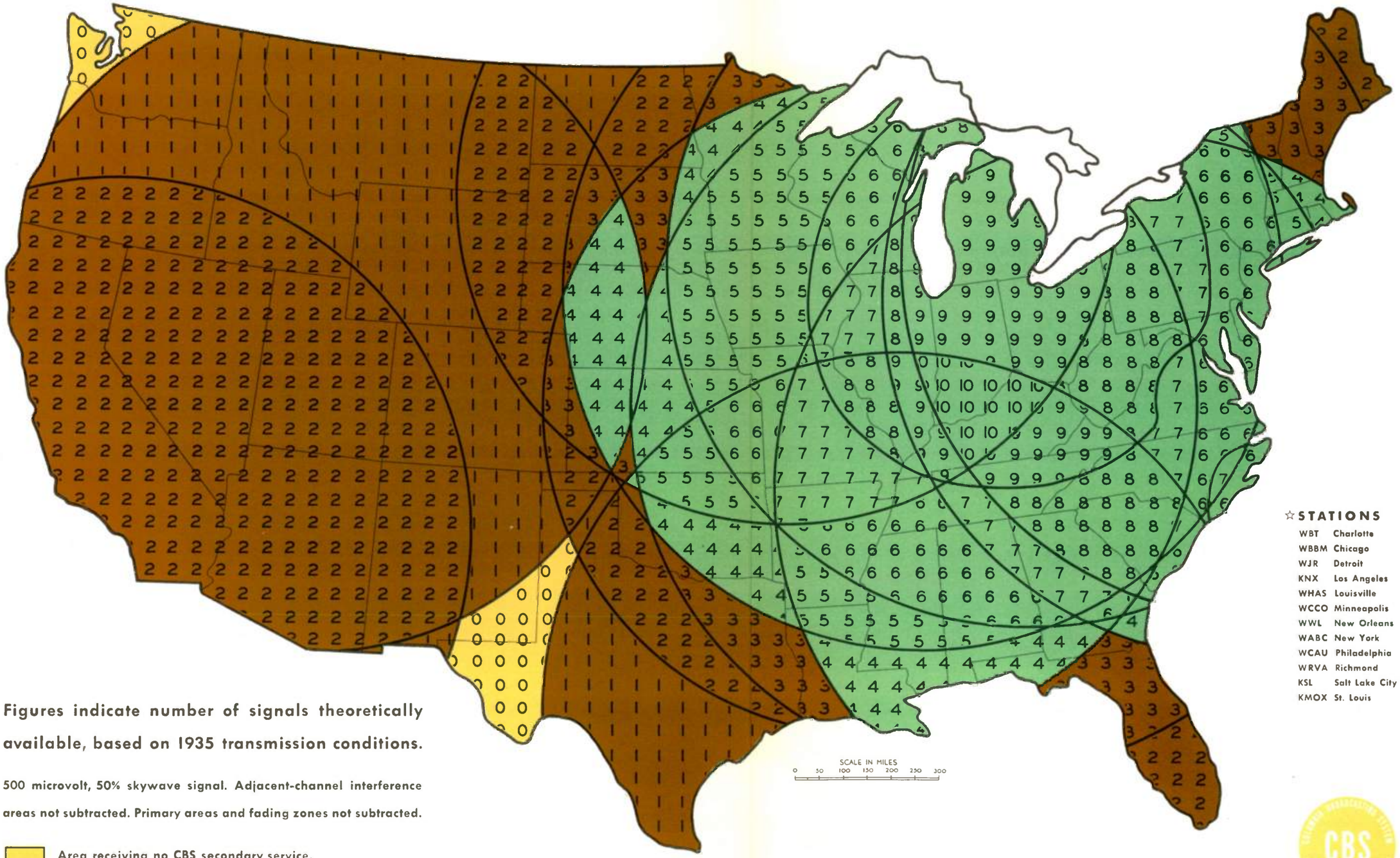
WBBM Chicago
WJR Detroit
WHAS Louisville
WABC New York
WCAU Philadelphia
KMOX St. Louis

CBS

SECONDARY COVERAGE FROM 50 KW STATIONS — CBS BASIC NETWORK.
Primary areas, fading zones and adjacent-channel interference areas not subtracted — 500 microvolt signal.

EXHIBIT E 14: Secondary coverage from 50 kw stations☆

CBS COMPLETE NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

500 microvolt, 50% skywave signal. Adjacent-channel interference areas not subtracted. Primary areas and fading zones not subtracted.

- Area receiving no CBS secondary service.
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

WBT	Charlotte
WBBM	Chicago
WJR	Detroit
KNX	Los Angeles
WHAS	Louisville
WCCO	Minneapolis
WWL	New Orleans
WABC	New York
WCAU	Philadelphia
WRVA	Richmond
KSL	Salt Lake City
KMOX	St. Louis

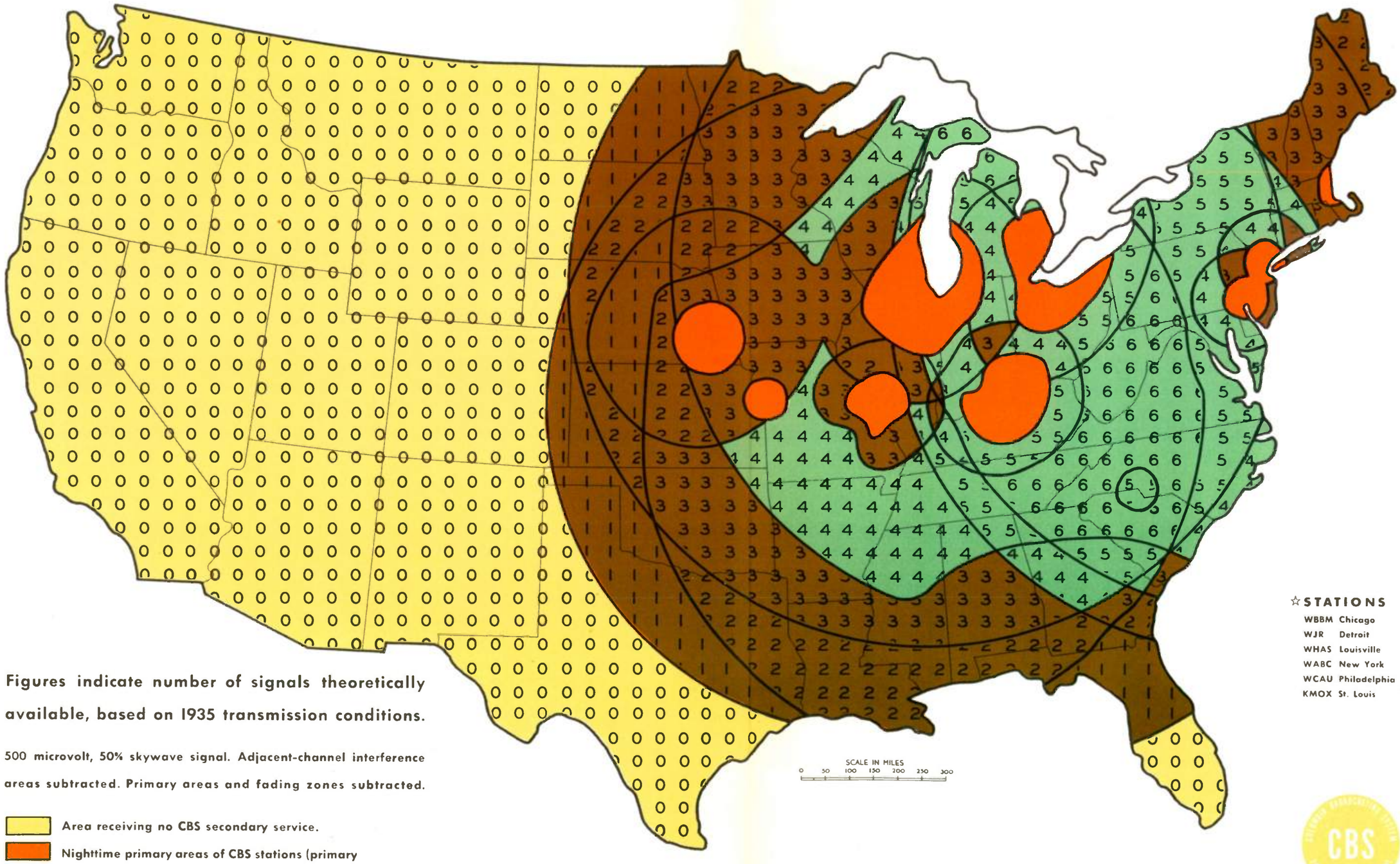
CBS

E 14

SECONDARY COVERAGE FROM 50 KW STATIONS — CBS COMPLETE NETWORK.
Primary areas, fading zones and adjacent-channel interference areas not subtracted — 500 microvolt signal.

EXHIBIT E 15: Secondary coverage from 50 kw stations☆

CBS BASIC NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

500 microvolt, 50% skywave signal. Adjacent-channel interference areas subtracted. Primary areas and fading zones subtracted.

- Area receiving no CBS secondary service.
- Nighttime primary areas of CBS stations (primary areas less than 3000 square miles not shown).
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

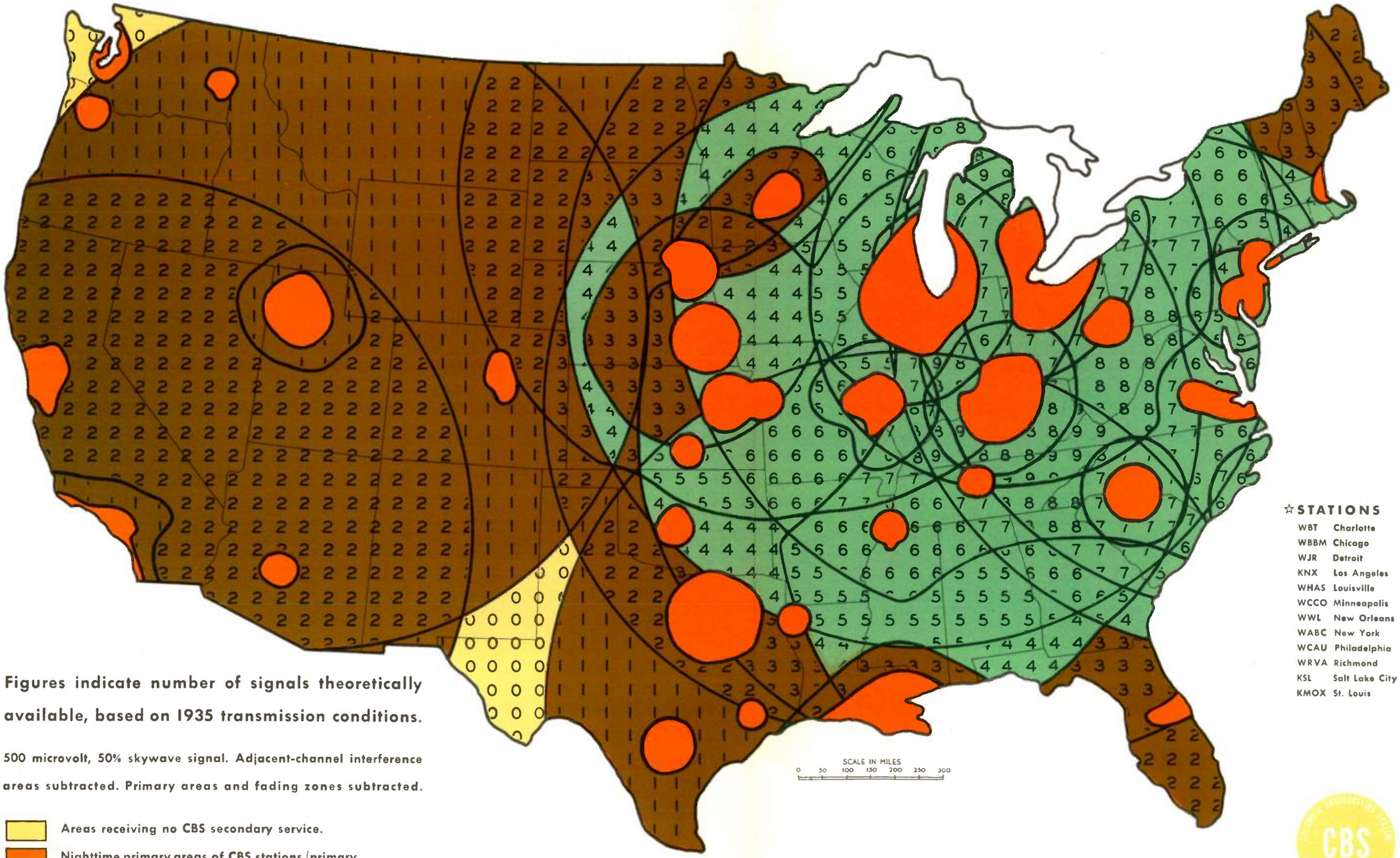
WBBM Chicago
WJR Detroit
WHAS Louisville
WABC New York
WCAU Philadelphia
KMOX St. Louis

CBS

SECONDARY COVERAGE FROM 50 KW STATIONS — CBS BASIC NETWORK.
Primary areas, fading zones and adjacent-channel interference areas subtracted — 500 microvolt signal.

EXHIBIT E 16: Secondary coverage from 50 kw stations☆

CBS COMPLETE NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

500 microvolt, 50% skywave signal. Adjacent-channel interference areas subtracted. Primary areas and fading zones subtracted.

- Areas receiving no CBS secondary service.
- Nighttime primary areas of CBS stations (primary areas less than 3000 square miles not shown).
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

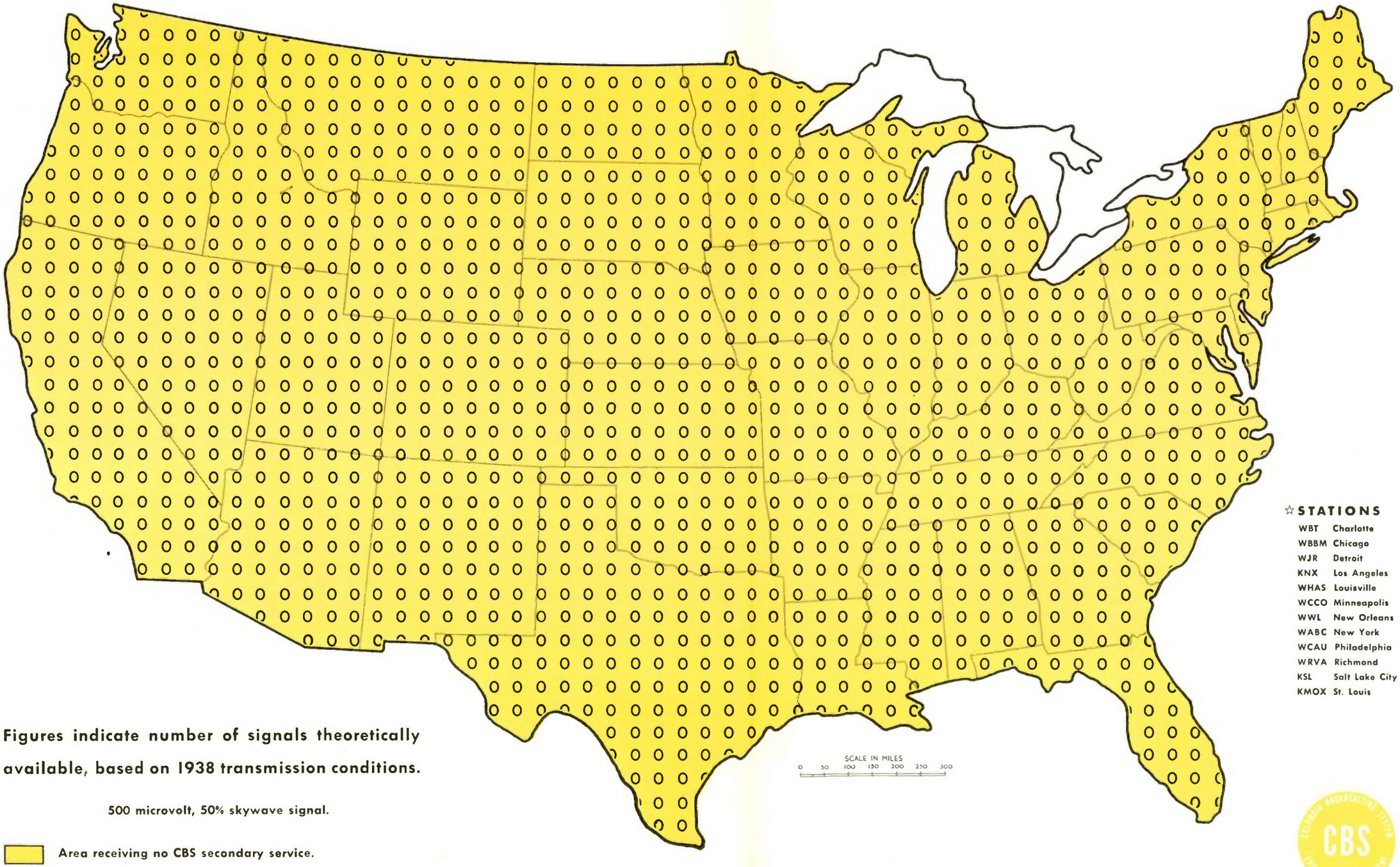
WBT	Charlotte
WBBM	Chicago
WJR	Detroit
KNX	Los Angeles
WHAS	Louisville
WCCO	Minneapolis
WWL	New Orleans
WABC	New York
WCAU	Philadelphia
WRVA	Richmond
KSL	Salt Lake City
KMOX	St. Louis

CBS

SECONDARY COVERAGE FROM 50 KW STATIONS—CBS COMPLETE NETWORK.
Primary areas, fading zones and adjacent-channel interference areas subtracted — 500 microvolt signal.

EXHIBIT E 17: Secondary coverage from 50 kw stations☆

CBS COMPLETE NETWORK



☆STATIONS

WBT	Charlotte
WBBM	Chicago
WJR	Detroit
KNX	Los Angeles
WHAS	Louisville
WCCO	Minneapolis
WWL	New Orleans
WABC	New York
WCAU	Philadelphia
WRVA	Richmond
KSL	Salt Lake City
KMOX	St. Louis

Figures indicate number of signals theoretically available, based on 1938 transmission conditions.

500 microvolt, 50% skywave signal.

Area receiving no CBS secondary service.

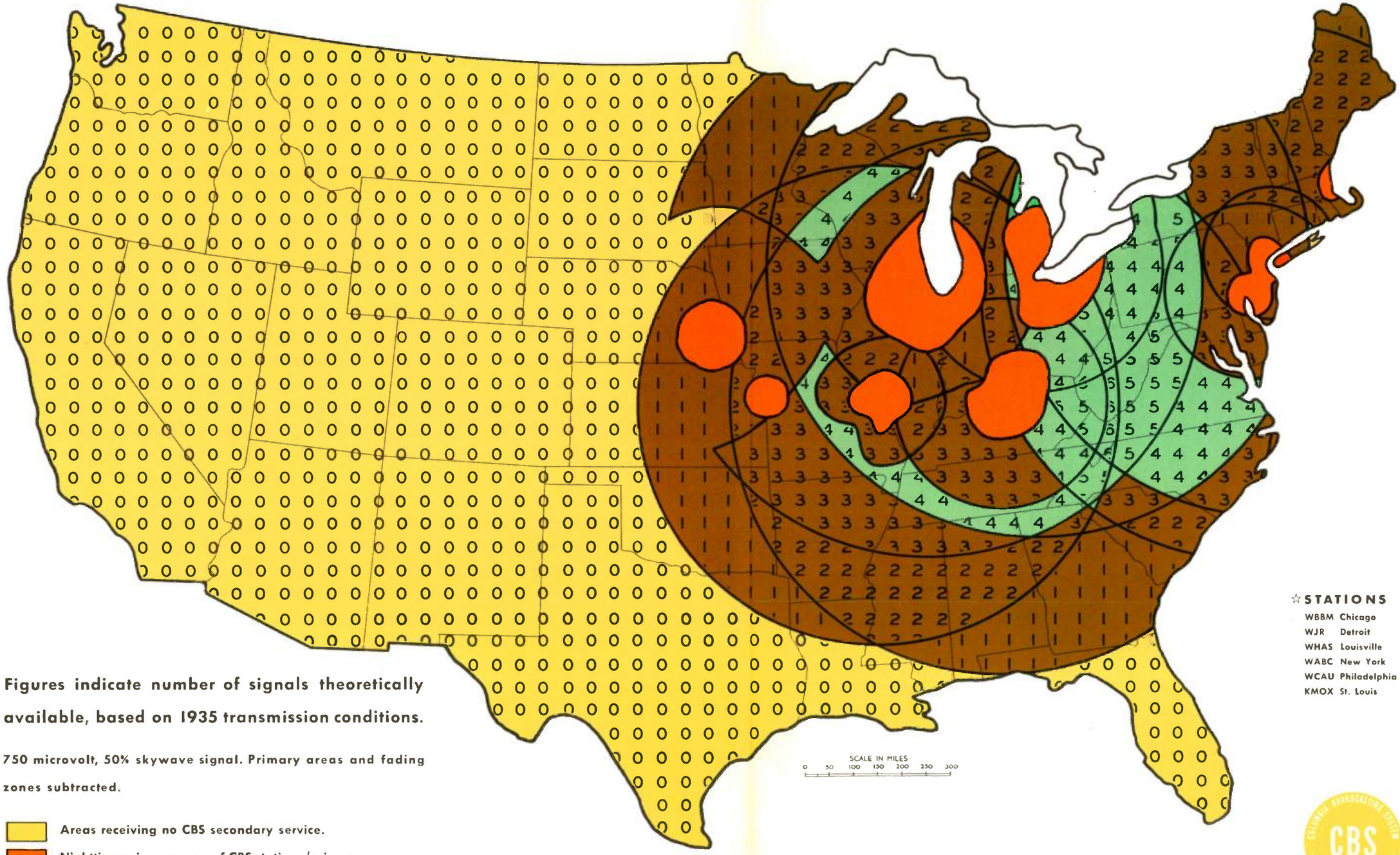
CBS

SECONDARY COVERAGE FROM 50 KW STATIONS—CBS COMPLETE NETWORK.

1938 transmission conditions.

EXHIBIT E 18: Secondary coverage from 50 kw stations☆

CBS BASIC NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

750 microvolt, 50% skywave signal. Primary areas and fading zones subtracted.

- Areas receiving no CBS secondary service.
- Nighttime primary areas of CBS stations (primary areas less than 3000 square miles not shown).
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

WBBM Chicago
WJR Detroit
WHAS Louisville
WABC New York
WCAU Philadelphia
KMOX St. Louis

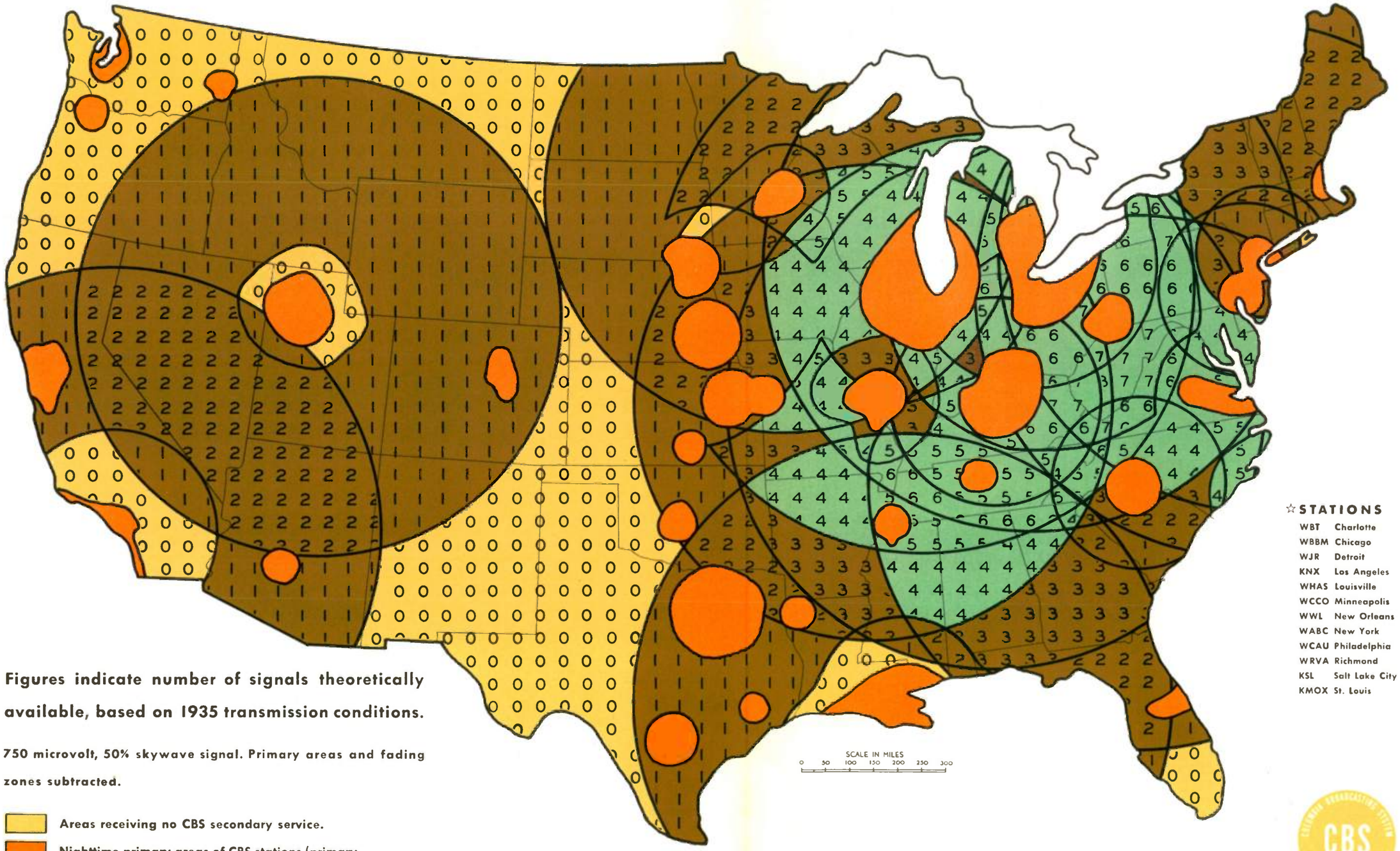
CBS

SECONDARY COVERAGE FROM 50 KW STATIONS — CBS BASIC NETWORK.

Primary areas and fading zones subtracted — 750 microvolt signal.

EXHIBIT E 19: Secondary coverage from 50 kw stations☆

CBS COMPLETE NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

750 microvolt, 50% skywave signal. Primary areas and fading zones subtracted.

- Areas receiving no CBS secondary service.
- Nighttime primary areas of CBS stations (primary areas less than 3000 square miles not shown).
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

WBT	Charlotte
WBBM	Chicago
WJR	Detroit
KNX	Los Angeles
WHAS	Louisville
WCCO	Minneapolis
WWL	New Orleans
WABC	New York
WCAU	Philadelphia
WRVA	Richmond
KSL	Salt Lake City
KMOX	St. Louis

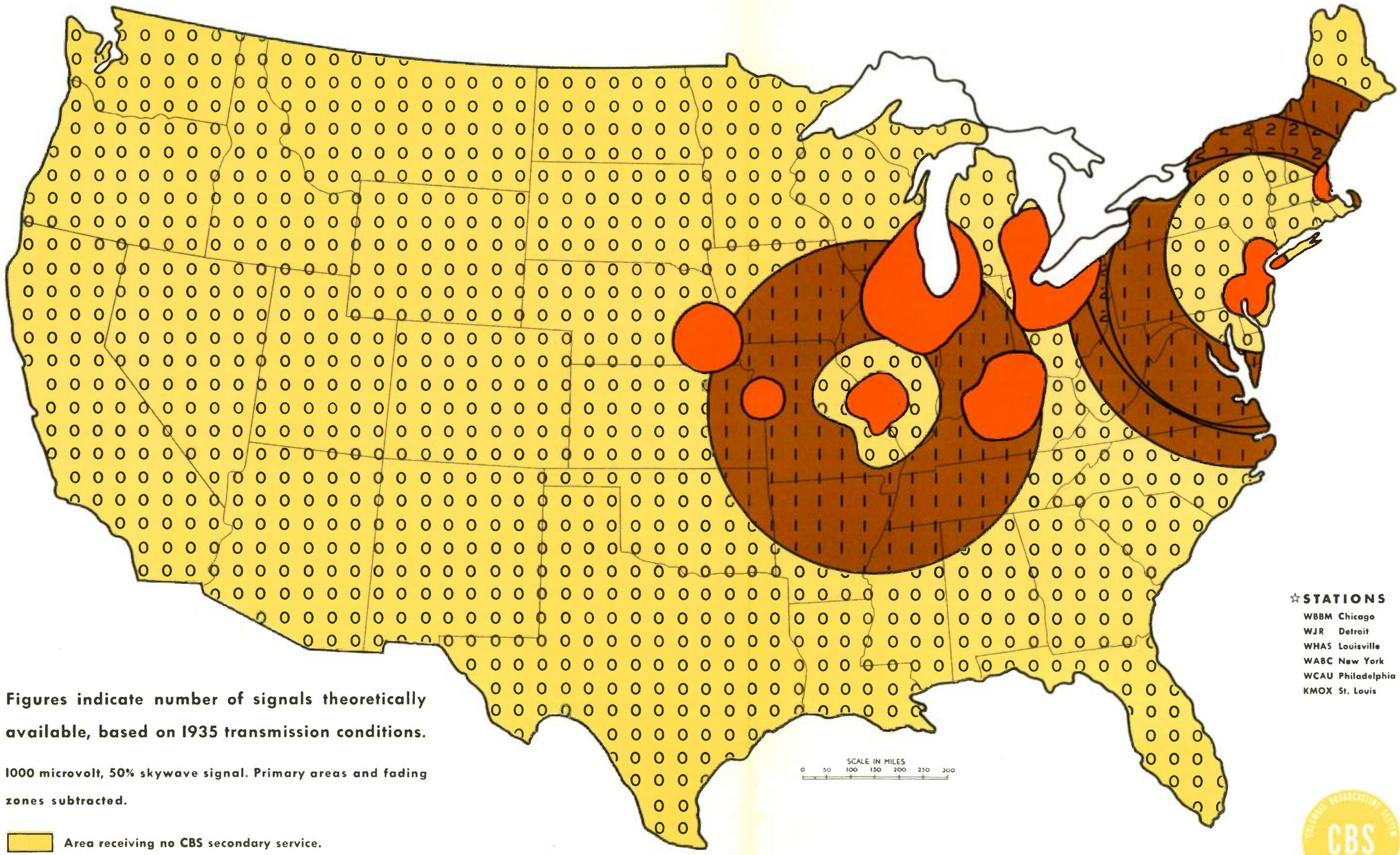
CBS

SECONDARY COVERAGE FROM 50 KW STATIONS—CBS COMPLETE NETWORK.

Primary areas and fading zones subtracted—750 microvolt signal.

EXHIBIT E 20: Secondary coverage from 50 kw stations☆

CBS BASIC NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

1000 microvolt, 50% skywave signal. Primary areas and fading zones subtracted.

- Area receiving no CBS secondary service.
- Nighttime primary areas of CBS stations (primary areas less than 3000 square miles not shown).
- Secondary area with 1 to 3 CBS signals theoretically available.

☆STATIONS

WBBM Chicago
WJR Detroit
WHAS Louisville
WABC New York
WCAU Philadelphia
KMOX St. Louis

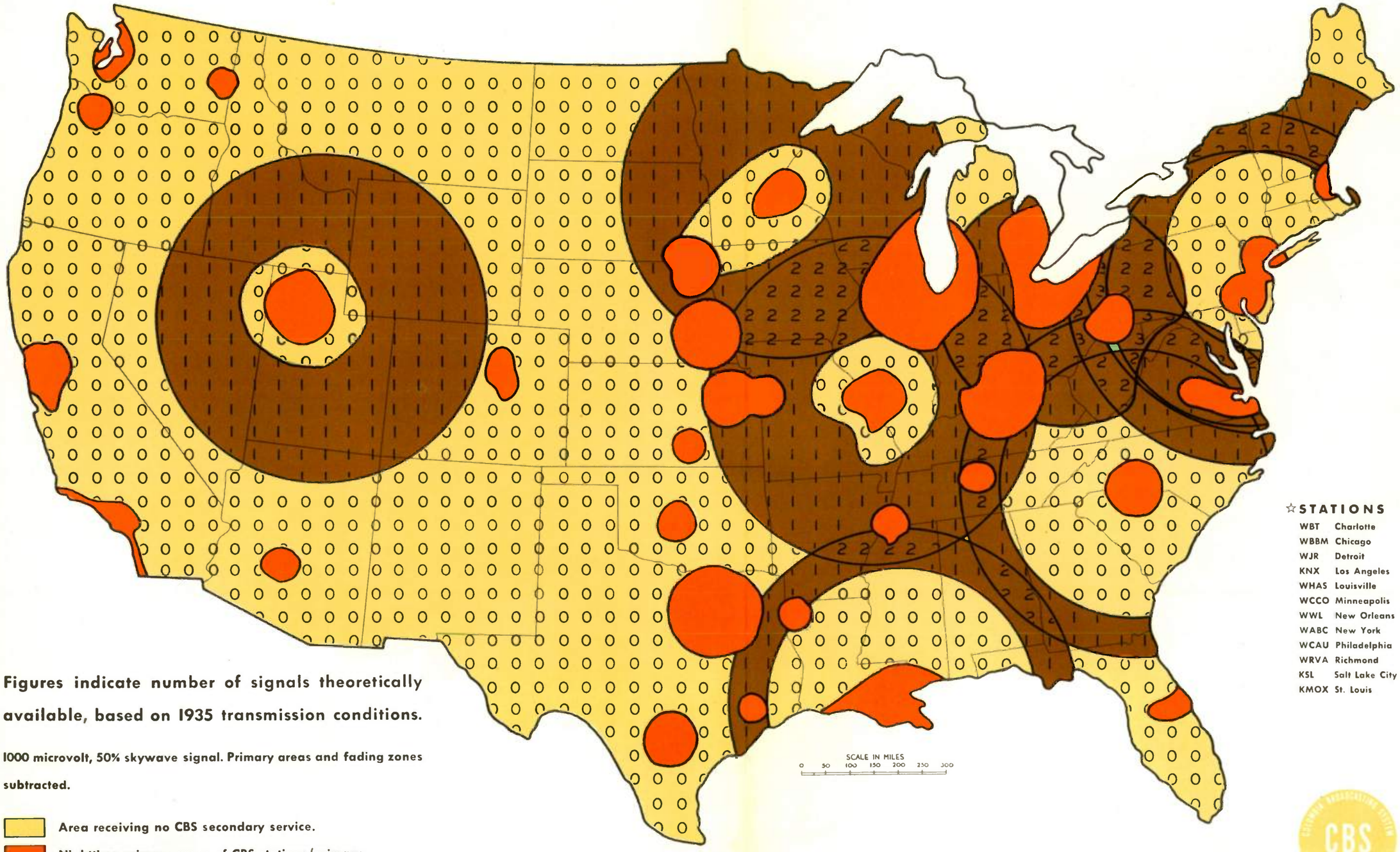
CBS

E 20

SECONDARY COVERAGE FROM 50 KW STATIONS—CBS BASIC NETWORK.
Primary areas and fading zones subtracted—1000 microvolt signal.

EXHIBIT E 21: Secondary coverage from 50 kw stations☆

CBS COMPLETE NETWORK



Figures indicate number of signals theoretically available, based on 1935 transmission conditions.

1000 microvolt, 50% skywave signal. Primary areas and fading zones subtracted.

- Area receiving no CBS secondary service.
- Nighttime primary areas of CBS stations (primary areas less than 3000 square miles not shown).
- Secondary area with 1 to 3 CBS signals theoretically available.
- Secondary area with 4 or more CBS signals theoretically available.

☆STATIONS

WBT	Charlotte
WBBM	Chicago
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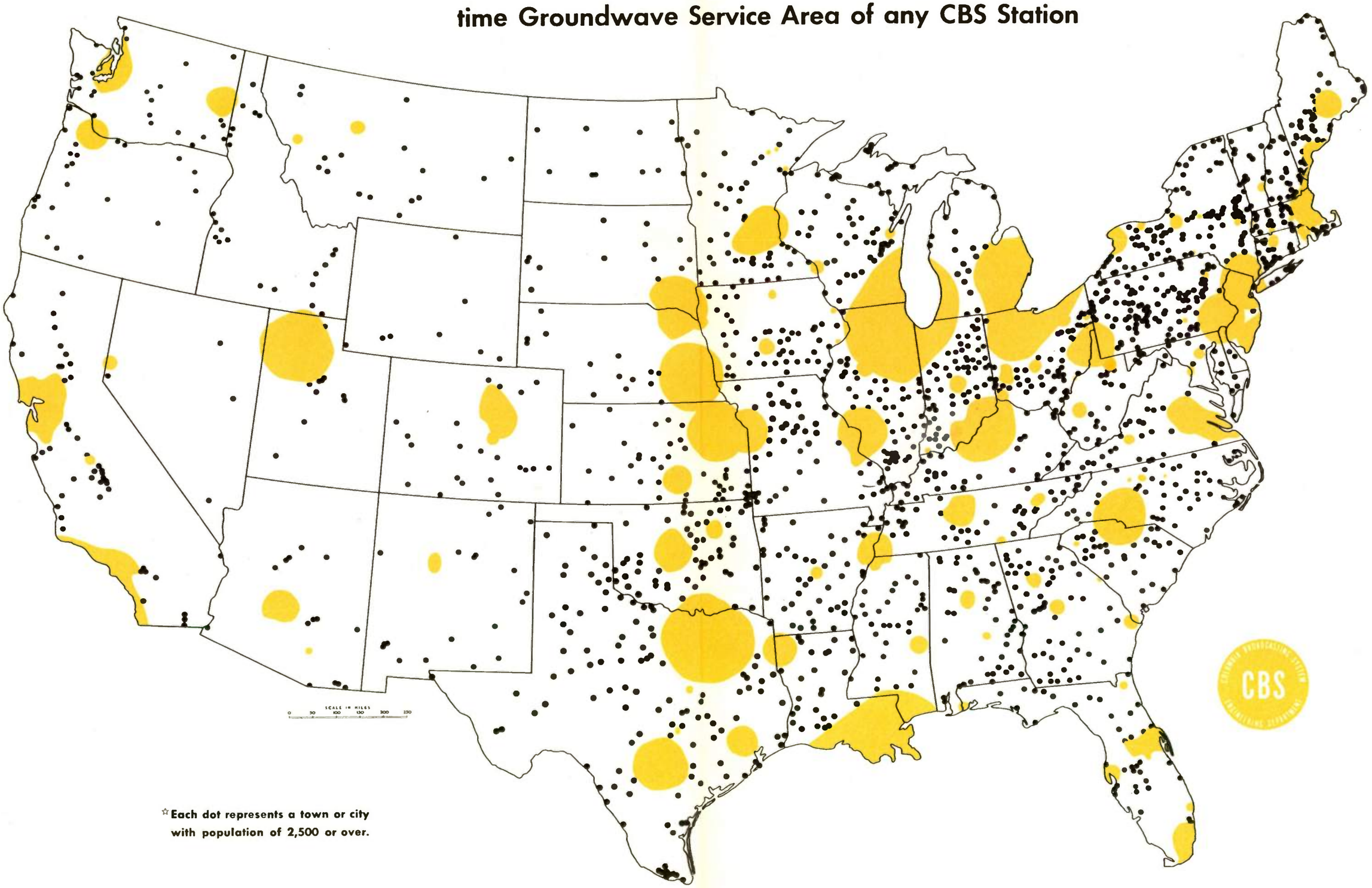
WWL	New Orleans
WABC	New York
WCAU	Philadelphia
WRVA	Richmond
KSL	Salt Lake City
KMOX	St. Louis

CBS

WRH

SECONDARY COVERAGE FROM 50 KW STATIONS—CBS COMPLETE NETWORK.
Primary areas and fading zones subtracted—1000 microvolt signal.

EXHIBIT E 22: Distribution of Urban Population☆ Outside the Nighttime Groundwave Service Area of any CBS Station



☆Each dot represents a town or city with population of 2,500 or over.

DISTRIBUTION OF URBAN POPULATION OUTSIDE THE NIGHTTIME GROUNDWAVE SERVICE AREA OF ANY CBS STATION.

E 22

TABLE I: TOTAL GROUNDWAVE SERVICE

Network	DAY					NIGHT				
	Exhibit Number	Area		Population[2]		Exhibit Number	Area		Population[2]	
		Sq. Mi.	% U. S.	Thousands	% U. S.		Sq. Mi.	% U. S.	Thousands	% U. S.
Basic	E 1	410,200	13.8%	60,056	48.9%	E 7	140,600	4.7%	42,795	34.9%
Average	E 2	649,500	21.8	72,733	59.2	E 8	337,700	11.4	60,544	49.3
Complete	E 3	1,163,100	39.1	93,882	76.5	E 9	365,500	12.3	66,676	54.3

[1] Defined as a signal above 0.5 mv/m groundwave, during daylight hours; and, at night, as a fading-free signal, interference-free, and above 0.5 mv/m groundwave.

[2] All population figures in these tables are based on U. S. Population, Census of 1930.

TABLE II: DAY GROUNDWAVE DUPLICATION—BY AREA

No. of Signals[3]	Basic Network (E 1)		Average Network (E 2)		Complete Network (E 3)	
	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.
0	2,563,500	86.21%	2,324,200	78.16%	1,810,600	60.89%
1	295,700	9.94	530,500	17.84	863,400	29.03
2	87,500	2.94	103,900	3.50	207,800	6.99
3	15,900	0.53	12,300	0.41	76,700	2.58
4	8,200	0.28	2,800	0.09	12,300	0.41
5	2,900	0.10	0	0.00	2,900	0.10
6 or more	0	0.00	0	0.00	0	0.00
U. S. Total	2,973,700	100.00	2,973,700	100.00	2,973,700	100.00

[3] Above 0.5 mv/m groundwave.

TABLE III: DAY GROUNDWAVE DUPLICATION—BY POPULATION

No. of Signals[4]	Basic Network (E 1)		Average Network (E 2)		Complete Network (E 3)	
	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.
0	62,719	51.08%	50,042	40.76%	28,893	23.53%
1	55,572	45.26	67,407	54.90	82,743	67.39
2	3,139	2.56	4,648	3.79	8,030	6.54
3	867	0.71	623	0.51	2,212	1.80
4	356	0.29	55	0.04	731	0.60
5	122	0.10	0	0.00	166	0.14
6 or more	0	0.00	0	0.00	0	0.00
U. S. Total	122,775	100.00	122,775	100.00	122,775	100.00

[4] Population estimates in areas receiving two or more CBS signals do not include persons residing in communities where, according to FCC standards, signals are insufficient for satisfactory service. The population estimates for areas receiving one signal include all persons receiving 0.5 mv/m or more from a single CBS station.

TABLE IV: NIGHT GROUNDWAVE DUPLICATION—BY AREA

No. of Signals[5]	Basic Network (E 7)		Average Network (E 8)		Complete Network (E 9)	
	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.
0	2,833,100	95.27%	2,636,000	88.64%	2,608,200	87.71%
1	138,600	4.66	329,300	11.08	356,000	11.97
2	2,000	0.07	8,400	0.28	9,500	0.32
3 or more	0	0.00	0	0.00	0	0.00
U. S. Total	2,973,700	100.00	2,973,700	100.00	2,973,700	100.00

[5] Above 0.5 mv/m groundwave, fading-free and interference-free.

TABLE V: NIGHT GROUNDWAVE DUPLICATION—BY POPULATION

No. of Signals[6]	Basic Network (E 7)		Average Network (E 8)		Complete Network (E 9)	
	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.
0	79,980	65.14%	62,231	50.69%	56,099	45.69%
1	42,572	34.68	59,955	48.83	65,818	53.61
2	223	0.18	589	0.48	858	0.70
3 or more	0	0.00	0	0.00	0	0.00
U. S. Total	122,775	100.00	122,775	100.00	122,775	100.00

[6] Population estimates in areas receiving two or more CBS signals do not include persons residing in communities where, according to FCC standards, signals are insufficient for satisfactory service. The population estimates for areas receiving one signal include all persons receiving more than 0.5 mv/m, fading-free and interference-free, from a single CBS station.

TABLE VI: SECONDARY (NIGHT, SKYWAVE) DUPLICATION—BY AREA

500 MICROVOLT, 50% SKYWAVE SIGNAL

No. of Signals	Basic Network (E 15)		Complete Network (E 16)	
	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.
1	215,900	7.2%	558,100	18.8%
2	236,800	8.0	858,300	28.8
3	382,000	12.8	229,500	7.7
4	252,800	8.5	208,200	7.0
5	180,600	6.1	175,500	5.9
6	133,000	4.5	202,300	6.8
7	0	0.0	163,300	5.5
8	0	0.0	110,900	3.7
9	0	0.0	31,700	1.1
10 or more	0	0.0	0	0.0
Total Secondary	1,401,100	47.1	2,537,800	85.3
No Service	1,432,000	48.2	70,400	2.4
Total Primary	140,600	4.7	365,500	12.3
U. S. Total	2,973,700	100.0	2,973,700	100.0

750 MICROVOLT, 50% SKYWAVE SIGNAL

No. of Signals	Basic Network (E 18)		Complete Network (E 19)	
	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.
1	295,800	9.9%	886,100	29.8%
2	248,500	8.4	424,800	14.3
3	285,800	9.6	215,400	7.2
4	161,100	5.4	242,000	8.1
5	60,100	2.0	120,000	4.0
6	4,800	0.2	94,200	3.2
7	0	0.0	35,200	1.2
8	0	0.0	2,000	0.1
9 or more	0	0.0	0	0.0
Total Secondary	1,056,100	35.5	2,019,700	67.9
No Service	1,777,000	59.8	588,500	19.8
Total Primary	140,600	4.7	365,500	12.3
U. S. Total	2,973,700	100.0	2,973,700	100.0

1000 MICROVOLT, 50% SKYWAVE SIGNAL

No. of Signals	Basic Network (E 20)		Complete Network (E 21)	
	Sq. Mi.	% U. S.	Sq. Mi.	% U. S.
1	356,000	11.97%	746,900	25.12%
2	28,700	0.97	169,300	5.69
3	0	0.00	13,000	0.44
4	0	0.00	400	0.01
5 or more	0	0.00	0	0.00
Total Secondary	384,700	12.94	929,600	31.26
No Service	2,448,400	82.33	1,678,600	56.45
Total Primary	140,600	4.73	365,500	12.29
U. S. Total	2,973,700	100.00	2,973,700	100.00

TABLE VII: SECONDARY (NIGHT, SKYWAVE) DUPLICATION—BY POPULATION

500 MICROVOLT, 50% SKYWAVE

No. of Signals	Basic Network (E 15)				Complete Network (E 16)			
	Urban and Rural		Rural		Urban and Rural		Rural	
	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.
1	4,934	4.0%	2,494	4.6%	4,334	3.5%	2,763	5.1%
2	7,296	5.9	4,216	7.8	4,884	4.0	3,520	6.6
3	18,082	14.7	9,992	18.6	4,108	3.3	3,094	5.8
4	13,326	10.9	8,802	16.4	7,287	5.9	4,314	8.0
5	13,122	10.7	7,872	14.6	8,119	6.6	5,468	10.2
6	8,327	6.8	5,970	11.1	7,430	6.1	6,482	12.0
7	0	0.0	0	0.0	10,683	8.7	6,570	12.2
8	0	0.0	0	0.0	6,484	5.3	4,800	8.9
9	0	0.0	0	0.0	2,188	1.8	1,633	3.0
10 or more	0	0.0	0	0.0	0	0.0	0	0.0
Total Secondary	65,087	53.0	39,346	73.1	55,517	45.2	38,644	71.8
No Service	14,893	12.1	6,659	12.4	582	0.5	257	0.5
Total Primary	42,795	34.9	7,815	14.5	66,676	54.3	14,919	27.7
U. S. Total	122,775	100.0	53,820	100.0	122,775	100 0	53,820	100.0

750 MICROVOLT, 50% SKYWAVE

No. of Signals	Basic Network (E 18)				Complete Network (E 19)			
	Urban and Rural		Rural		Urban and Rural		Rural	
	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.
1	10,219	8.3%	6,685	12.4%	8,843	7.2%	6,300	11.7%
2	14,223	11.6	7,355	13.7	9,168	7.5	5,052	9.4
3	17,586	14.3	11,493	21.4	8,449	6.9	6,179	11.5
4	9,291	7.6	4,939	9.2	10,117	8.2	7,650	14.2
5	5,102	4.2	3,617	6.7	4,976	4.1	4,163	7.7
6	910	0.7	706	1.3	6,434	5.2	4,060	7.6
7	0	0.0	0	0.0	2,977	2.4	2,114	3.9
8	0	0.0	0	0.0	376	0.3	261	0.5
9 or more	0	0.0	0	0.0	0	0.0	0	0.0
Total Secondary	57,331	46.7	34,795	64.7	51,340	41.8	35,779	66.5
No Service	22,649	18.4	11,210	20.8	4,759	3.9	3,122	5.8
Total Primary	42,795	34.9	7,815	14.5	66,676	54.3	14,919	27.7
U. S. Total	122,775	100.0	53,820	100.0	122,775	100.0	53,820	100.0

1000 MICROVOLT, 50% SKYWAVE

No. of Signals	Basic Network (E 20)				Complete Network (E 21)			
	Urban and Rural		Rural		Urban and Rural		Rural	
	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.	Thousands	% U. S.
1	18,506	15.07%	11,986	22.27%	17,638	14.36%	12,130	22.54%
2	2,420	1.97	1,184	2.20	7,297	5.94	6,020	11.19
3	0	0.00	0	0.00	1,079	0.88	684	1.27
4	0	0.00	0	0.00	33	0.03	33	0.06
5 or more	0	0.00	0	0.00	0	0.00	0	0.00
Total Secondary	20,926	17.04	13,170	24.47	26,047	21.21	18,867	35.06
No Service	59,054	48.10	32,835	61.01	30,052	24.48	20,034	37.22
Total Primary	42,795	34.86	7,815	14.52	66,676	54.31	14,919	27.72
U. S. Total	122,775	100.00	53,820	100.00	122,775	100.00	53,820	100.00