Is Over-the-Air Still Relevant for TV?

18% of Americans (56.4 million) live in households that own an OTA antenna for watching TV

Among viewers 18-49, antenna ownership grew from 14% in 2021 to 23% in 2022
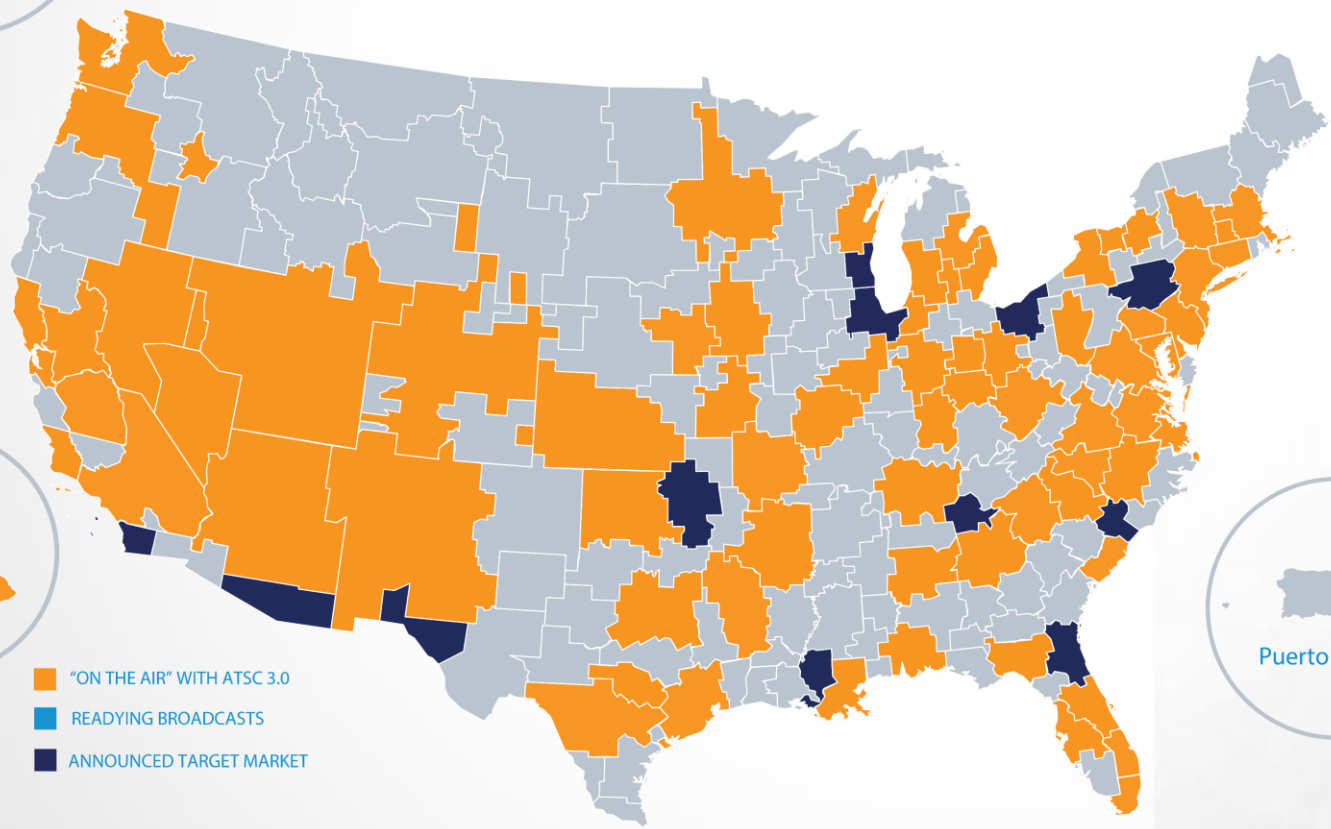
Horowitz Research
State of OTA
Oct 2022

Markets with Highest % of OTA homes

Phoenix	27%	Miami-Ft. Laud.	21%
Minneapolis-St. Paul	26%	Chicago	19%
Dallas-Ft. Worth	25%	Orlando	18%
Houston	23%	Los Angeles	18%
St. Louis	22%	Detroit	17%

Nielsen
The over-the-air evolution
April 2022

Current Snapshot of NextGen TV Markets

- **Number of markets: 70**

- **Number of channels: 384**

- **Number of host stations: 91**

- **Market Coverage of US TVHH: 71%**

- **Add'l on/before Q1/24: 4.8%**

Alaska

Hawaii

Puerto Rico

"ON THE AIR" WITH ATSC 3.0

READYING BROADCASTS

ANNOUNCED TARGET MARKET

Current Snapshot of NextGen TV Markets

| Markets 1-10 | 9 |
| Markets 11-20 | 9 |

Albany, New York

Albuquerque, New Mexico

Atlanta, Georgia

Austin, Texas

Baltimore, Maryland

Birmingham, Alabama

Boston, Massachusetts

Buffalo, New York

Champaign-Springfield, Illinois

Charleston, South Carolina

Charleston, West Virginia

Charlotte, North Carolina

Cincinnati, Ohio

Columbus, Ohio

Dallas-Fort Worth, Texas

Dayton, Ohio

Denver, Colorado

Des Moines, Iowa

Detroit, Michigan

Flint, Michigan

Fresno, California

Grand Rapids, Michigan

Green Bay, Wisconsin

Greenville-Spartanburg, South Carolina & Asheville, North Carolina

Greenville, North Carolina

Harrisburg, Pennsylvania

Hartford, Connecticut

Honolulu, Hawaii

Houston, Texas

Indianapolis, Indiana

Kansas City, Missouri

Las Vegas, Nevada

Little Rock, Arkansas

Los Angeles, California

Louisville, Kentucky

Lynchburg, Virginia

Miami, Florida

Minneapolis, Minnesota

Mobile, Alabama

Nashville, Tennessee

New Orleans, Louisiana

New York, New York

Norfolk, Virginia

Oklahoma City, Oklahoma

Omaha, Nebraska

Orlando, Florida

Philadelphia, Pennsylvania

Phoenix, Arizona

Pittsburgh, Pennsylvania

Portland, Oregon

Raleigh-Durham, North Carolina

Reno, Nevada

Richmond, Virginia

Rochester, New York

Sacramento, California

Salt Lake City, Utah

San Antonio, Texas

San Francisco, California

Seattle, Washington

Shreveport, Louisiana

South Bend, Indiana

Springfield, Massachusetts

Springfield, Missouri

St. Louis, Missouri

Syracuse, New York

Tallahassee, Florida

Tampa, Florida

Washington, D.C.

West Palm Beach, Florida

Wichita-Hutchinson, Kansas

Winston-Salem, North Carolina

- **Number of markets: 70**
- **Number of channels: 384**
- **Number of host stations: 91**
- **Mkt Coverage of US TVHH: 71%**
- **Add'l on/before Q1/24: 4.8%**

Consumer Facing Logo for ATSC 3.0 Products

Logo announced in 2019

NEXTGEN TV logo certification

- CTA logo program funded by NAB and CTA
  - Implemented by contractor Resillion (formerly Eurofins Digital Testing)
  - 2023 V1.0 NEXTGEN TV test suite (for 2024 model sets) launched on June 30– currently 209 required tests
  - Test suite under continued development and expansion

NEXTGENTV TV Set Manufacturers

Hisense

LG Electronics

New models/brands expected at 2024 CES

SAMSUNG

All models → SONY

NEXTGEN TV and A3SA Certification are Separate but Linked

- ATSC 3.0 Security Authority formed in 2019
  - CBS, Disney/ABC, Fox, NBCU, TelevisaUnivision, Pearl TV
- Covers signal signing, app signing, content encryption
- CTA logo applicants are expressly notified that broadcasts may be encrypted; required to certify that they have contacted A3SA
- Both programs use Resillion for test development
- Discussions underway to further unite programs
- Currently at least one encrypted program channel in over 40 of 70 ATSC 3.0 markets; total of more than 90 program channels are encrypted

Broadcast Encoding Rules

To provide extra reassurance for viewers of ATSC 3.0 content, A3SA has approved a set of "encoding rules" for encrypted broadcasts that are simulcast with ATSC 1.0 broadcasts

Viewers must be allowed to decrypt and record these broadcasts even if they are using a less secure device that requires an internet connection

Viewers must be allowed to make an unlimited number of copies of these broadcasts

Such copies cannot have retention limits

Viewers must be allowed to use "trick play" features such as pause, rewind, fast-forward, and ad-skipping

Viewers must be allowed to use any authorized digital output (i.e., no selectable output control)

Viewers must be allowed to use analog outputs to connect to legacy TVs (i.e., no prohibition or required down-resolution)

NEXTGEN TV Accessory Devices

	NEXTGEN TV?	SHIPPING?
ADTH/Tolka NextGen Box	Yes+A3SA	Yes
Zinwell ZAT 600B	Yes+A3SA	Q4?
Bit Router ZapperBox M1	Yes +A3SA	Yes
SiliconDust HD HomeRun Flex 4K/ Scribe 4K (DVR)	Yes Gateway Device A3SA expected "soon"	Yes

NEXTGEN TV Accessory Devices

Note:

NEXTGEN TV accessory devices currently have <u>frequent firmware updates</u>

ATSC 3 Security Authority (A3SA)

A3SA.com website provides clear instructions on what broadcasters need to do:

- Signal signing and app signing are <u>required</u>
- Content encryption is <u>optional</u>

A Short Introduction to ATSC 3 Security Systems for Broadcasters

The ATSC 3 standard provides three fundamental cyber-security features to protect broadcasters and viewers in this Internet age.

Signal signing ensures the signal being received is from an FCC licensed broadcaster and that the information received has not been tampered with. Because 3.0 is essentially a broadband system, this authentication technology is derived from the security we experience on the Internet today.

Application signing is the same authentication technology as signal signing, but, applied to applications. Applications must be signed by the author/developer and separately by any broadcaster transmitting the app.

Content security utilizes the same encryption technology used by Internet streaming services. Until now, broadcasters have been at a disadvantage, never being able to prevent signal and content theft. It is one of the great advances in ASTC 3.

Signal and application signing are required in ATSC 3. Content encryption is optional, but is commonly required by media companies in their distribution agreements.

What should broadcasters do?

To get started with signing, host broadcasters need to apply for signing certificates ASAP. These certificates work for all stations on a Lighthouse. Receiver manufacturers have already started to check for signatures. Depending upon a consumer's settings, a receiver may decline to display an unsigned station's content. For applications, many receivers will not launch an unsigned or improperly signed application.
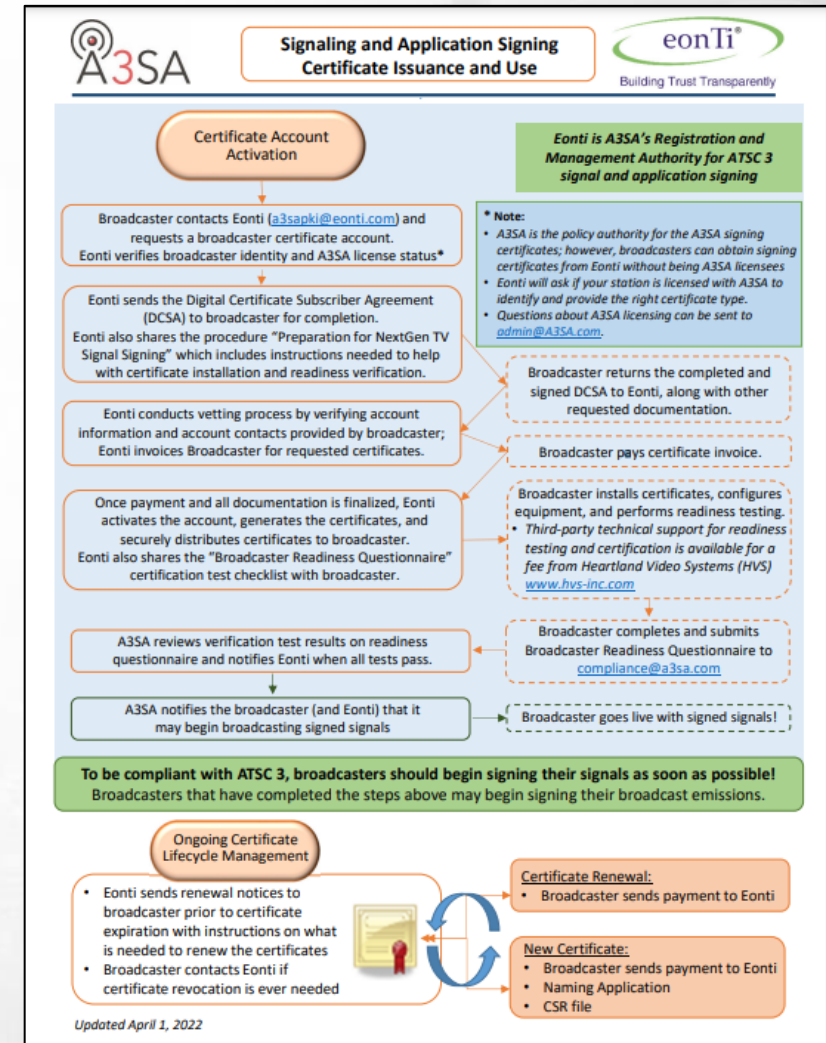
To get started with encryption, every broadcaster, not just Hosts, needs to register with A3SA to obtain the necessary credentials.

Annual Security Costs for Planning Purposes					
Signal Signing	Application Signing		Content Encryption		
	Author	Distributor	Small Market	Middle Market	Large Market
$998.00	$499.00	$499.00	$1,000.00	$1,500.00	$2,000.00

Heartland Video Services offers optional assistance with installation of the signing ($250.) and content protection ($850.)

Additional Information is available from admin@A3SA.com including more complete executive level and technical descriptions and the engineering Application Note - Preparation for NextGen TV Signal Signing.
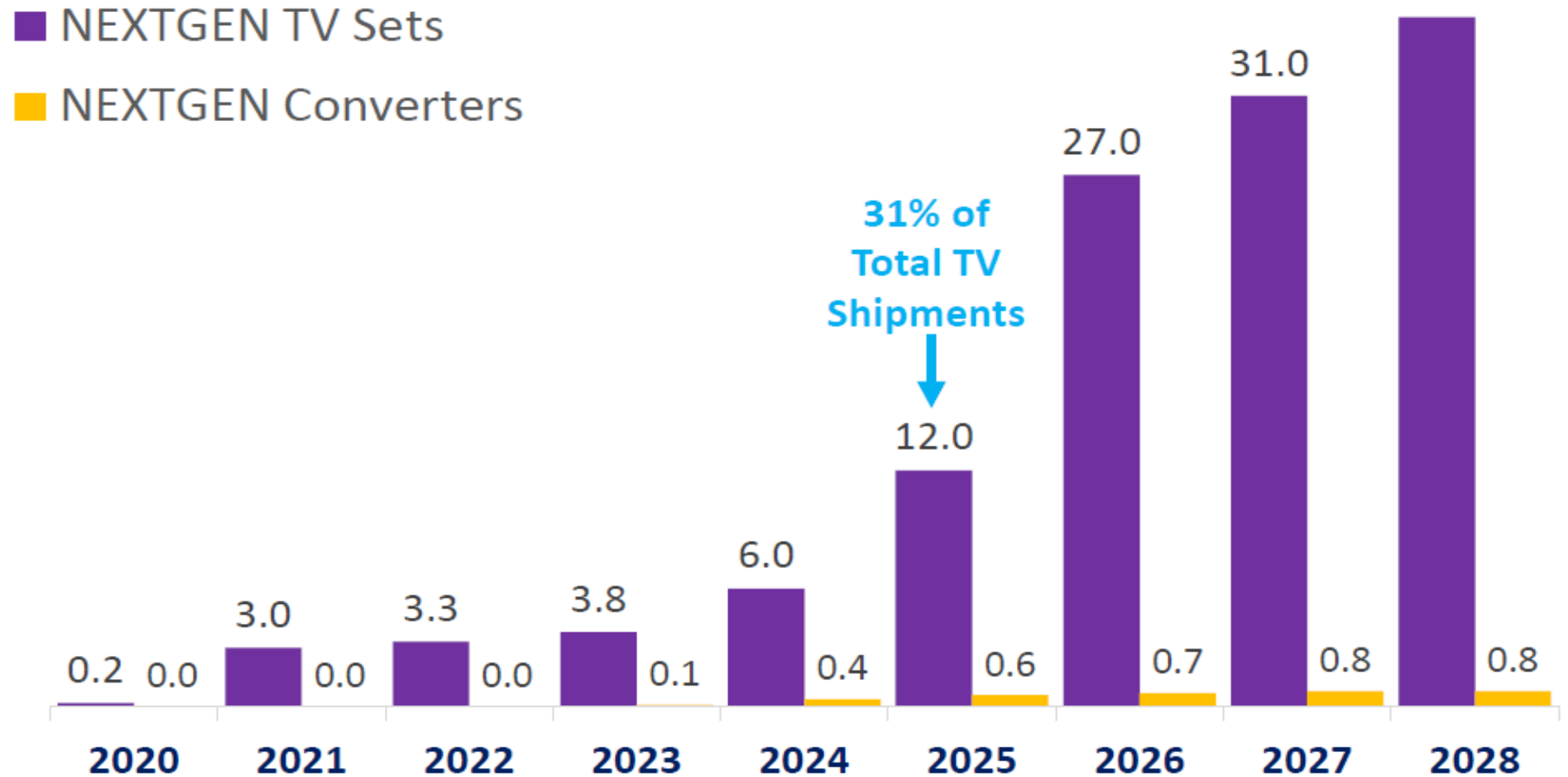
A3SA

The ATSC 3.0 Security Authority was created by the major networks and large broadcast groups, in consultation with the Consumer Technology Association (CTA), to implement these ATSC standards. A3SA is developing the necessary infrastructure and governance to support their adoption, bringing these capabilities to the content creation, broadcast and consumer electronics industries and for the protection of our viewers.

Signaling and Application Signing Certificate Issuance and Use

eonTi — Building Trust Transparently

Certificate Account Activation

Eonti is A3SA's Registration and Management Authority for ATSC 3 signal and application signing

Broadcaster contacts Eonti (a3sapki@eonti.com) and requests a broadcaster certificate account. Eonti verifies broadcaster identity and A3SA license status*

* Note:
- A3SA is the policy authority for the A3SA signing certificates; however, broadcasters can obtain signing certificates from Eonti without being A3SA licensees
- Eonti will ask if your station is licensed with A3SA to identify and provide the right certificate type.
- Questions about A3SA licensing can be sent to admin@A3SA.com.

Eonti sends the Digital Certificate Subscriber Agreement (DCSA) to broadcaster for completion. Eonti also shares the procedure "Preparation for NextGen TV Signal Signing" which includes instructions needed to help with certificate installation and readiness verification.

Broadcaster returns the completed and signed DCSA to Eonti, along with other requested documentation.

Eonti conducts vetting process by verifying account information and account contacts provided by broadcaster; Eonti invoices Broadcaster for requested certificates.

Broadcaster pays certificate invoice.

Once payment and all documentation is finalized, Eonti activates the account, generates the certificates, and securely distributes certificates to broadcaster. Eonti also shares the "Broadcaster Readiness Questionnaire" certification test checklist with broadcaster.

Broadcaster installs certificates, configures equipment, and performs readiness testing.
- Third-party technical support for readiness testing and certification is available for a fee from Heartland Video Systems (HVS) www.hvs-inc.com

A3SA reviews verification test results on readiness questionnaire and notifies Eonti when all tests pass.

Broadcaster completes and submits Broadcaster Readiness Questionnaire to compliance@a3sa.com

A3SA notifies the broadcaster (and Eonti) that it may begin broadcasting signed signals

Broadcaster goes live with signed signals!

To be compliant with ATSC 3, broadcasters should begin signing their signals as soon as possible! Broadcasters that have completed the steps above may begin signing their broadcast emissions.

Ongoing Certificate Lifecycle Management

- Eonti sends renewal notices to broadcaster prior to certificate expiration with instructions on what is needed to renew the certificates
- Broadcaster contacts Eonti if certificate revocation is ever needed

Certificate Renewal:
- Broadcaster sends payment to Eonti

New Certificate:
- Broadcaster sends payment to Eonti
- Naming Application
- CSR file

Updated April 1, 2022

NextGen TV Regulation

- Broadcasters may transmit in ATSC 3.0 if they arrange for another station to simulcast their ATSC 3.0 primary stream in ATSC 1.0
  - Simulcast on ATSC 1.0 must be "substantially similar" to ATSC 3.0
  - FCC RuleMaking released on June 23 2023 extends simulcast requirement until **July 17 2027**

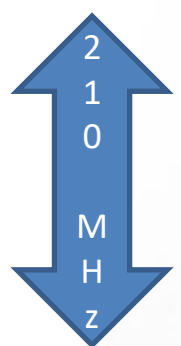# Next Gen TV Transition: No Additional Spectrum
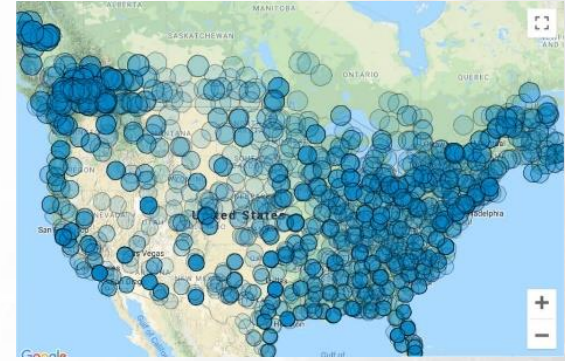
DTV Transition Spectrum

Ch 69
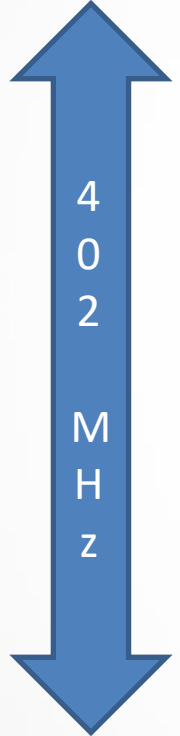
402 MHz

Ch 2

ATSC 3.0 Transition Spectrum

Ch 36

210 MHz

Ch 2

But there are about the same number of broadcasters

ATSC 3.0 Can't Flourish Until ATSC-1 is Turned Off
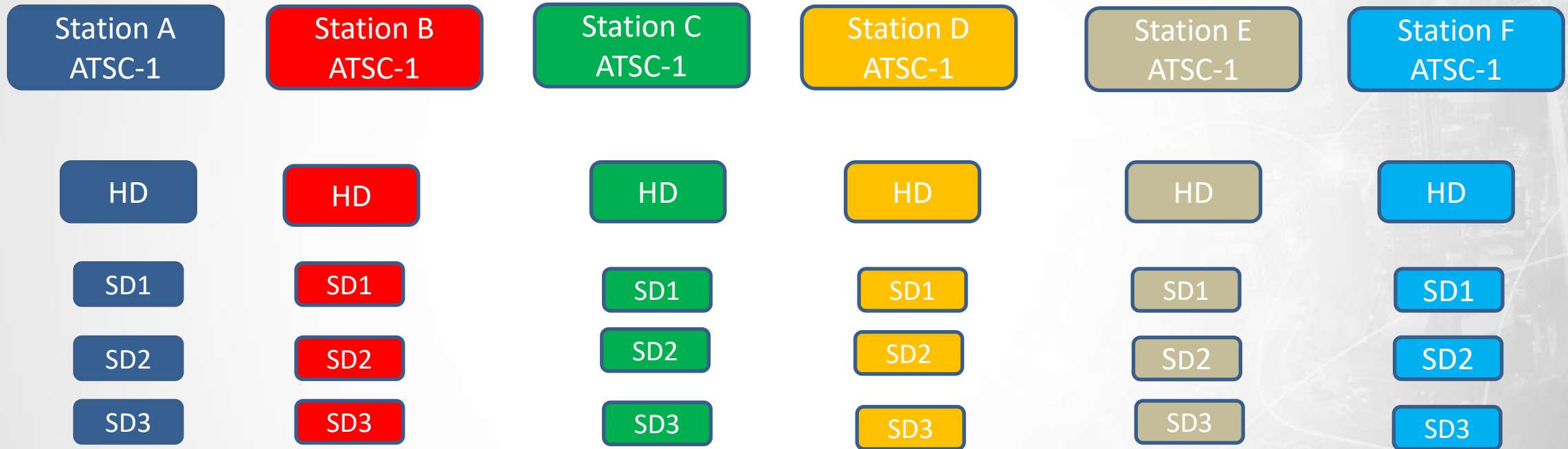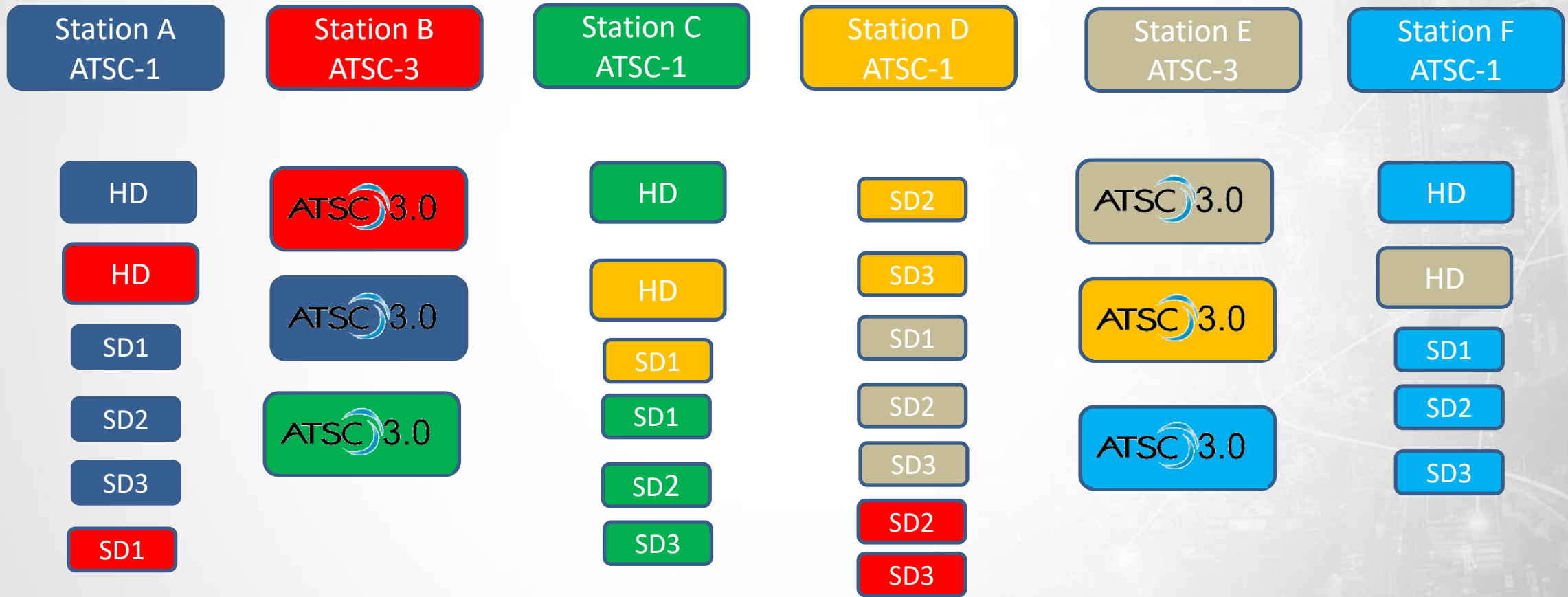
MPEG-4 compression can help optimize channel sharing to maximize ATSC 3.0 service

- MPEG-4 (aka h.264 aka AVC) compression requires about half the bandwidth of MPEG-2 for the same video quality level

  – Most "smart" TVs can decode MPEG-4 compressed streams in the broadcast signal

  – FCC requires MPEG-2 for "primary signal," diginets can use MPEG-4

  – ATSC recently updated its DTV Standard to better accommodate MPEG-4 (A/53 Part 3 "Service Multiplex and Transport")

  – Several dozen MPEG-4 diginets on the air around the country

- Statistical multiplexing allows packing more programs in a broadcast channel

In early 2023 NAB Requested Formation of FCC ATSC 3.0 Task Force

NAB suggestions for FCC Task Force work items

- ✓ **Develop and adopt a plan for a successful transition**

- ✓ **Facilitate stations launching ATSC 3.0 in the near term**

- ✓ **Streamline rules on ATSC 3.0 stations**
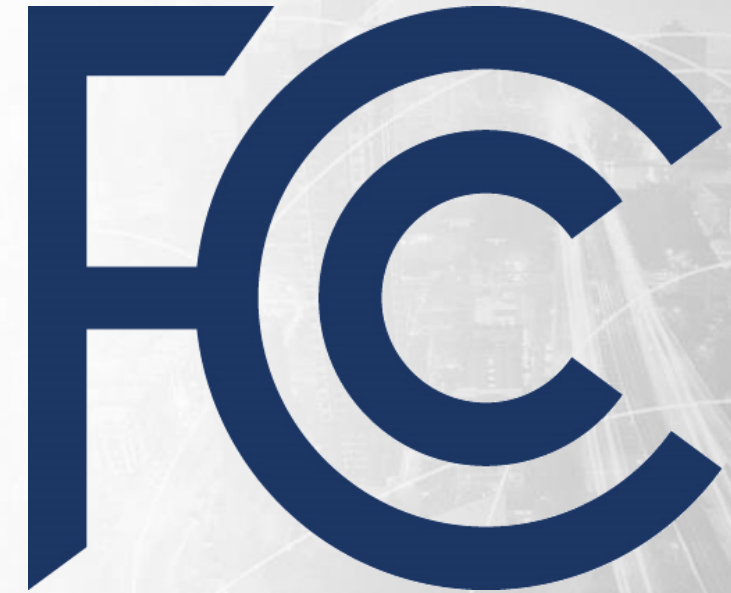
FCC announced a plan on April 17 for partnership with industry

Announced at 2023 NAB Show

FCC NEWS from the Federal Communications Commission

Media Contact:
Paloma Perez
paloma.perez@fcc.gov

For Immediate Release

FCC CHAIRWOMAN ANNOUNCES LAUNCH OF 'FUTURE OF TV' PUBLIC-PRIVATE INITIATIVE FOCUSED ON TRANSITION TO NEXTGEN TV

FCC & National Association of Broadcasters to Collaborate on Completing the Transition to ATSC 3.0

LAS VEGAS, April 17, 2023—FCC Chairwoman Jessica Rosenworcel today announced a new public-private initiative led by the National Association of Broadcasters (NAB) to guide the next steps of NextGen TV. "The Future of TV" initiative will work to identify a roadmap to orderly transition ATSC 1.0 to ATSC 3.0-based services as smoothly as possible for consumers.

FOTV Initiative – 3 working groups

- WG-1: Backwards Compatibility, Tuner Availability, Consumer Issues

+ WG-2: Completing the Transition

– Simulcasting – under what conditions may it end

– Managing 1.0 and 3.0 capacity as more stations transition

– Tuner and labeling standards

- WG-3: Post-transition Regulation

FOTV Initiative – 3 working groups

- WG-1: Backwards Compatibility, Tuner Availability, Consumer Issues
- WG-2: Completing the Transition

+ WG-3: Post-transition Regulation
  - Whether all ATSC 1.0 broadcasting must eventually end
  - MVPD carriage of 3.0 signals
  - Accessibility
  - Privacy and security

FOTV Initiative Schedule

- Working Group meetings began June 27
  - WG1: June 29
  - WG2: June 27
  - WG3: June 28

- Subsequent meetings of the three working groups scheduled every four weeks (or as needed)

- June 2024 is the target for written recommendations to FCC

What is the goal of the ATSC 3.0 transition?

Tran-si-tion *noun*

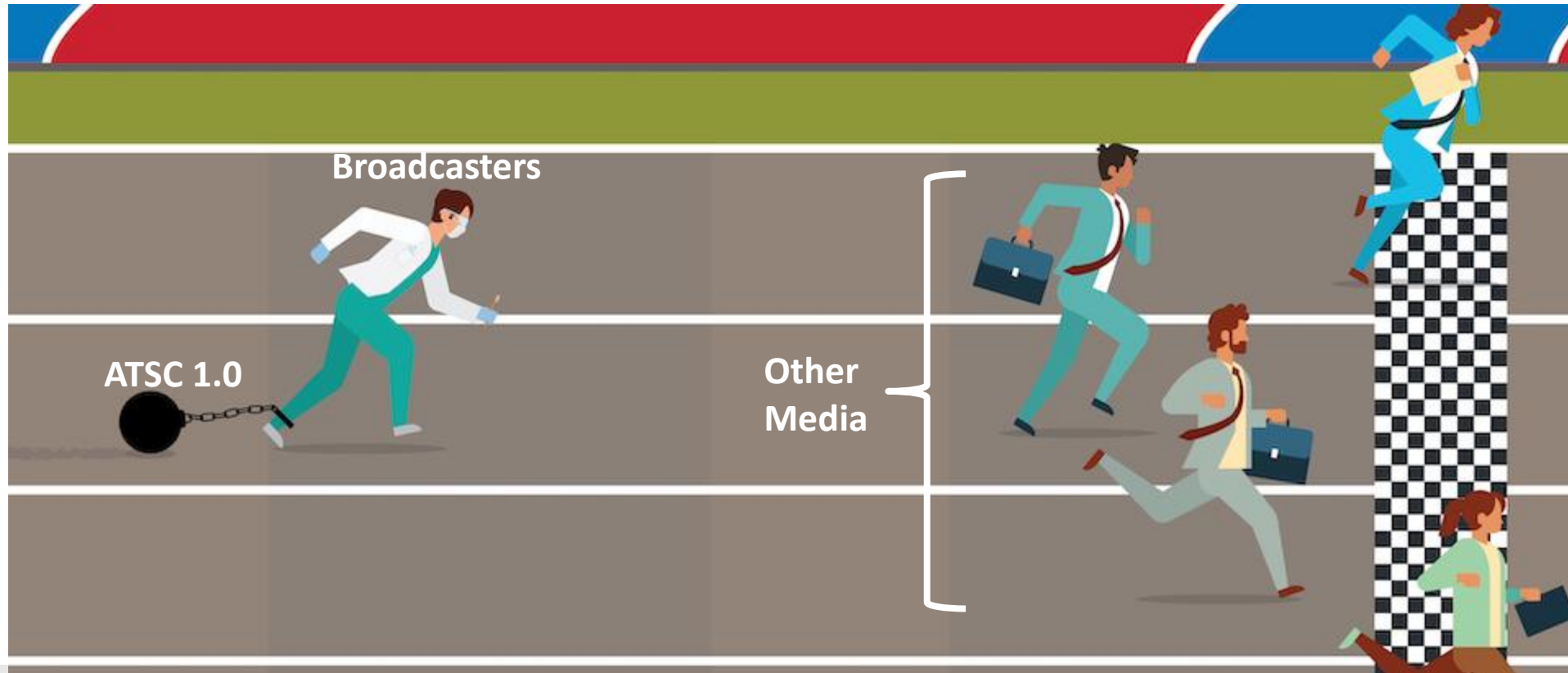the process or a period of *changing from one state* or condition *to another*

Change
Is
Easy…

Transitions
Are
Hard!

OTA Broadcasters

ATSC 3.0

ATSC 1.0

Eventually ATSC 1.0 becomes a competitive liability

Broadcasters

ATSC 1.0

Other Media

The Media Race

The worst outcome in a transition is to get stuck in the middle forever!