



Spectrum Policy Reform Update

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Presentation Outline

- **Review: Principal Task Force Findings and Recommendations**
- **Current Task Force Objectives and Key Functions**
- **Full-Speed Implementation and Other Activities**
- **The Road Ahead**





Disclaimers

- ✓ The FCC's Spectrum Policy Task Force Report was drafted by FCC staff and was not voted on or approved by the full Commission.
- ✓ Neither the Report nor any of the recommendations contained therein necessarily reflect the views of the full Commission, the Chairman or individual Commissioners.
- ✓ This presentation and the views expressed by the presenter do not necessarily reflect the views of the Commission.





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Recommendations

- Implement a new paradigm for interference protection.
- Migrate from current command and control model to market-oriented exclusive rights model and unlicensed device/commons model.
- Implement ways to increase access to spectrum in all dimensions for users of both unlicensed devices and licensed spectrum.





Recommendations

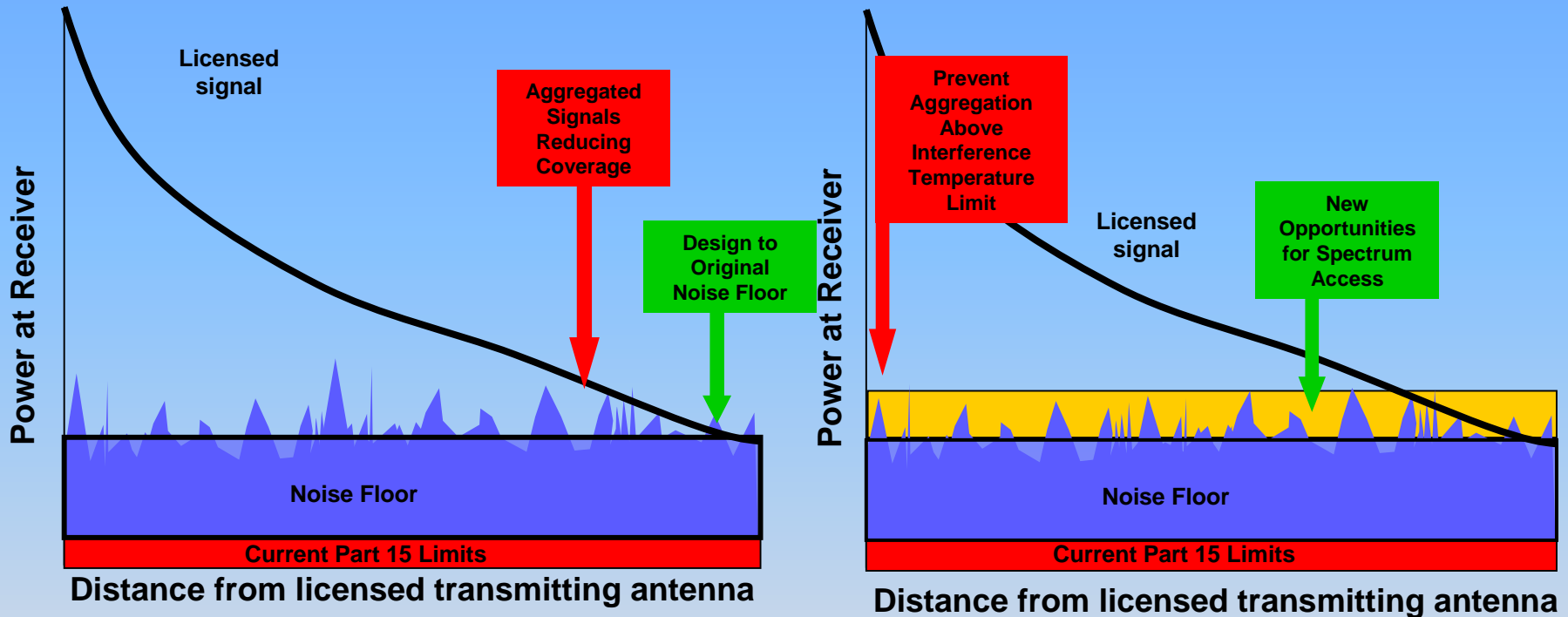
Interference Avoidance

- Adopt a more quantitative approach to interference management.
 - New “interference temperature” metric would establish maximum permissible levels of interference, characterizing the “worst case” environment in which a receiver would be expected to operate.
 - Different threshold levels could be set for each band, geographic region or service -- set only after review of the condition of the RF environment in each band.
 - **systematic study of the RF noise floor necessary**
- Receiver performance specifications for some bands and services, through incentives or mandates (or combination).



Interference Avoidance

Interference “Management” – Today and Proposed



- Quantify acceptable levels of interference
 - More Certainty for Licensees
 - More Opportunity for Consumer Devices





Recommendations

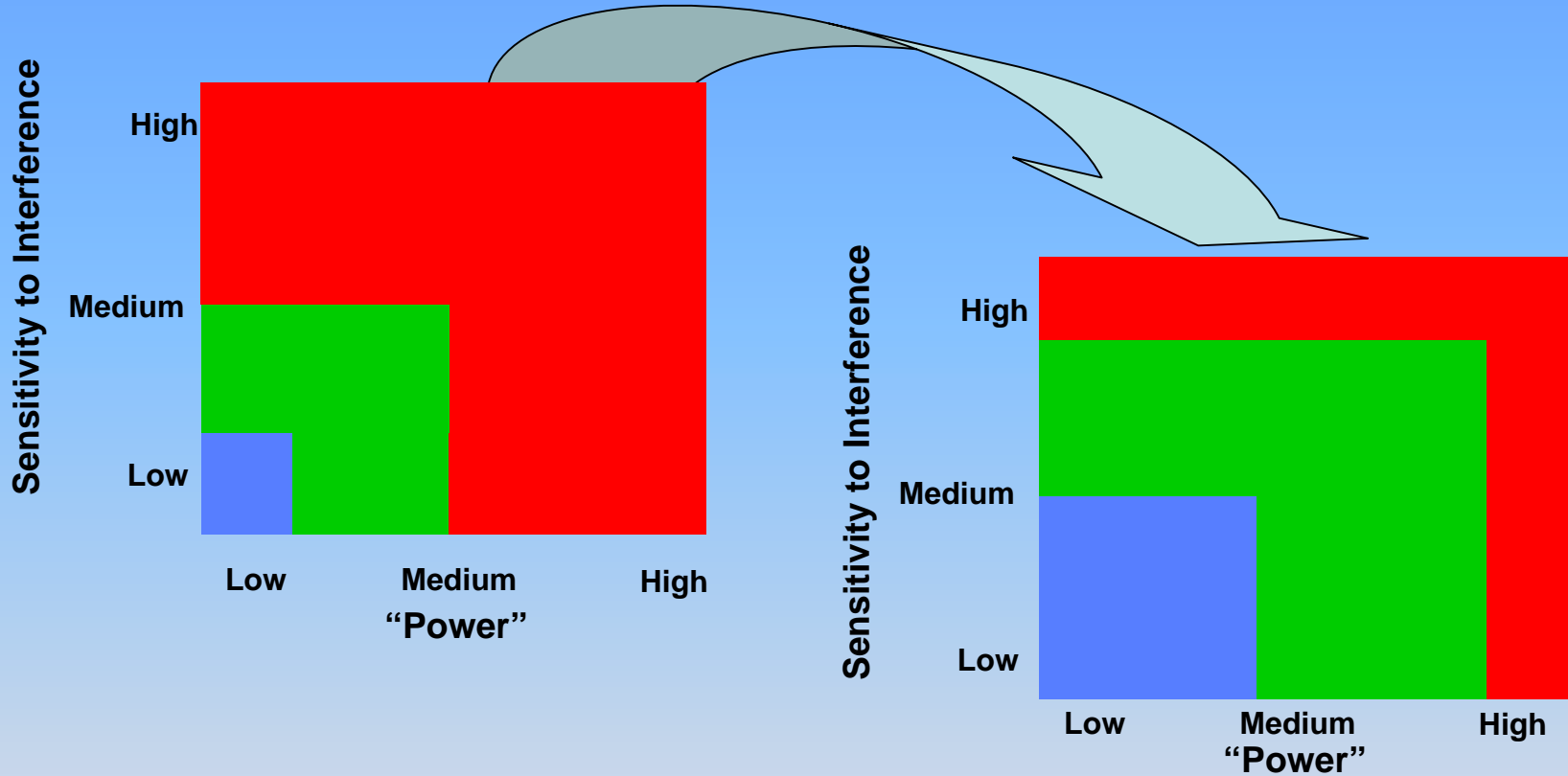
Spectrum Usage Models

- **One size does not fit all** – balance among three general models for assigning spectrum usage rights:
 - “Exclusive use” model. Licensees have exclusive, transferable and flexible use rights for specified spectrum bands within defined geographic areas. Rights governed primarily by technical rules to protect users against “harmful interference.”
 - “Commons” model. Unlimited numbers of unlicensed users share frequencies. Usage rights governed by technical standards or etiquettes for devices, but with no right to protection from interference.
 - “Command-and-control” model. Traditional spectrum “management” approach currently applied to most spectrum within FCC’s jurisdiction. Allowable spectrum uses limited based on regulatory judgments, technology and business models at time original rules adopted.



Spectrum Usage Models

Transition to Market-Based Models



Uses & Users Limited by Regulation

Flexible, Market-Based Services

Unlicensed, Consumer Devices

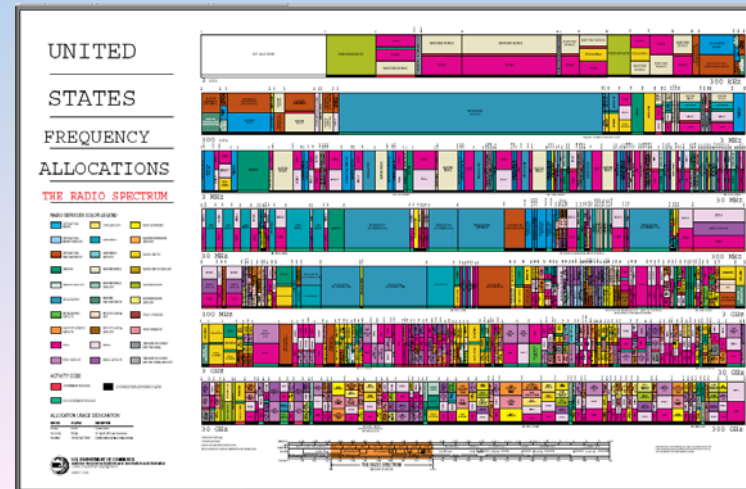


Recommendations

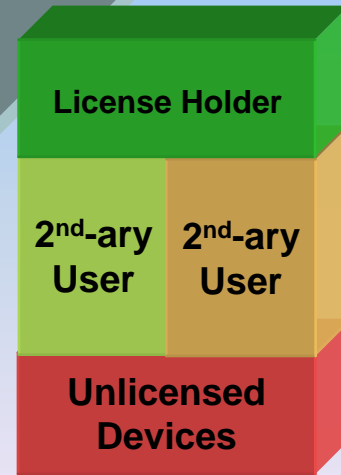
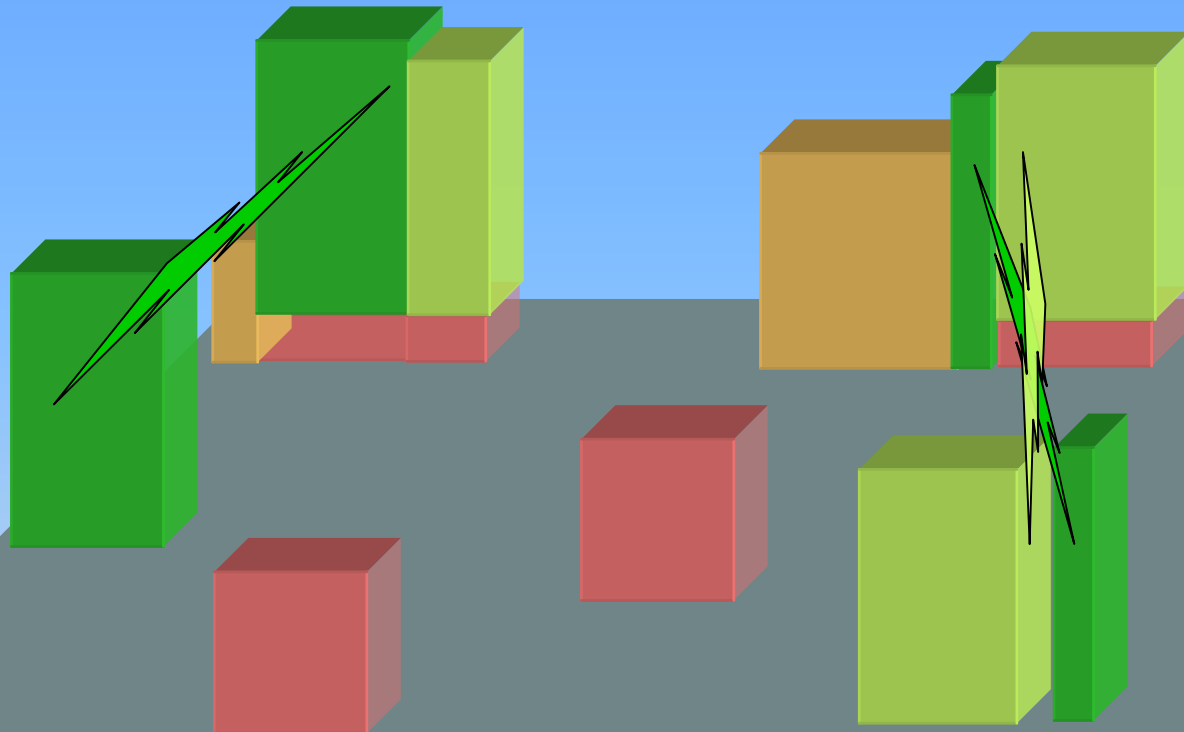
Spectrum Access



- Increased access can mitigate scarcity of spectrum resources
 - Most “prime spectrum” has already been assigned to one or more parties, and it is becoming increasingly difficult to find spectrum that can be made available either for new services or to expand existing ones.
 - Improving access to the spectrum can be achieved through permitting licensees greater flexibility.
 - Promote access in all dimensions through smarter technologies.

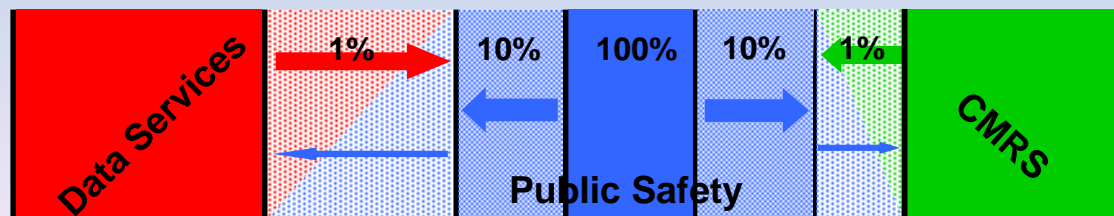
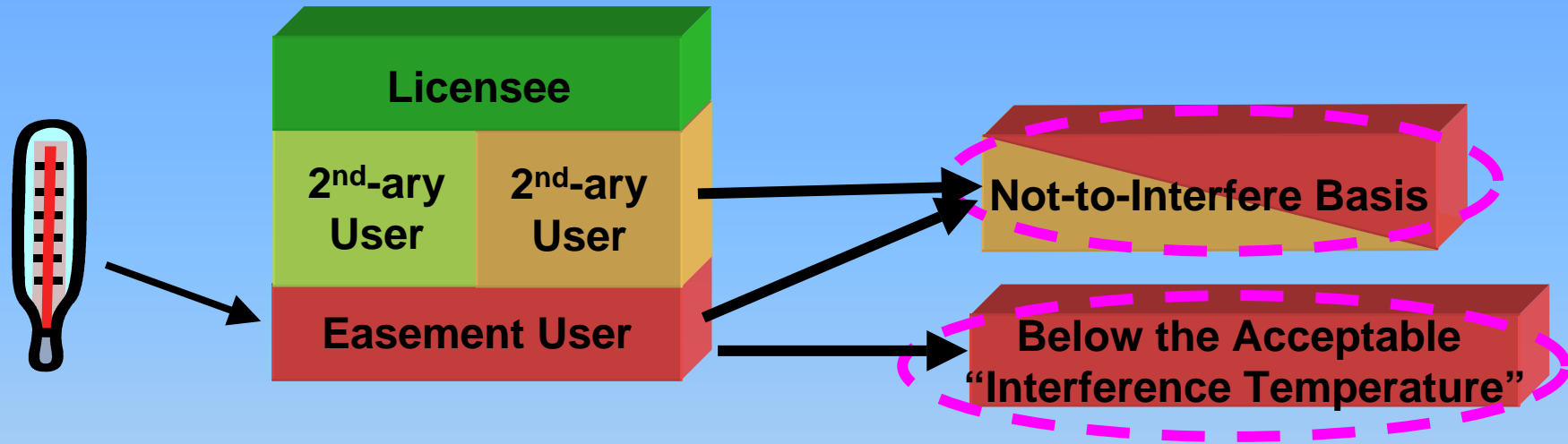


Access to Spectrum in All Dimensions



Access to Spectrum

The New Model & New Opportunities



Duty Cycle	
	100%
	10%
	1%





Presentation Outline

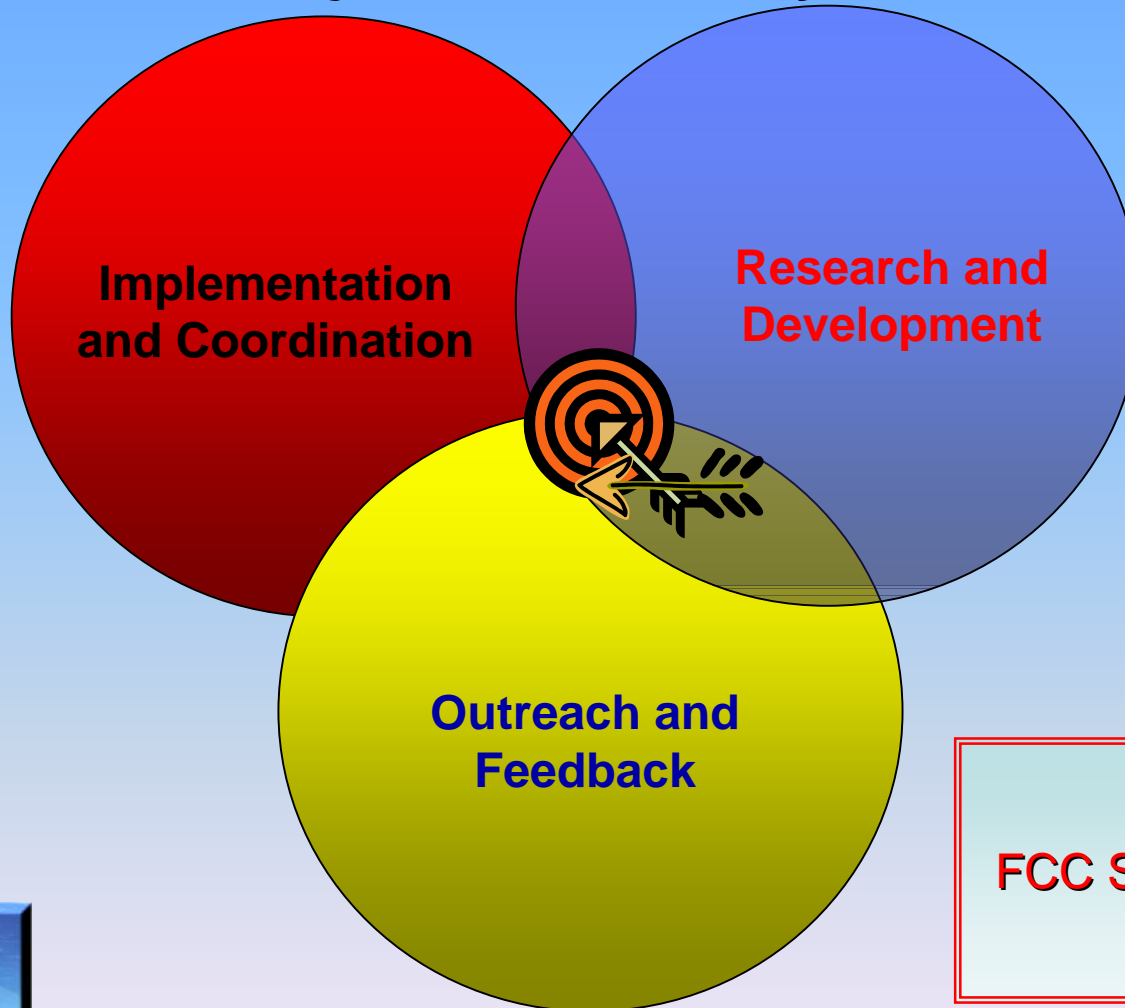
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Spectrum Policy Task Force

Objectives and Key Functions



FCC STRATEGIC GOALS





Task Force Objectives:

Maintain Focus on FCC's Strategic Goals for Spectrum

- **FCC Strategic Goal:**

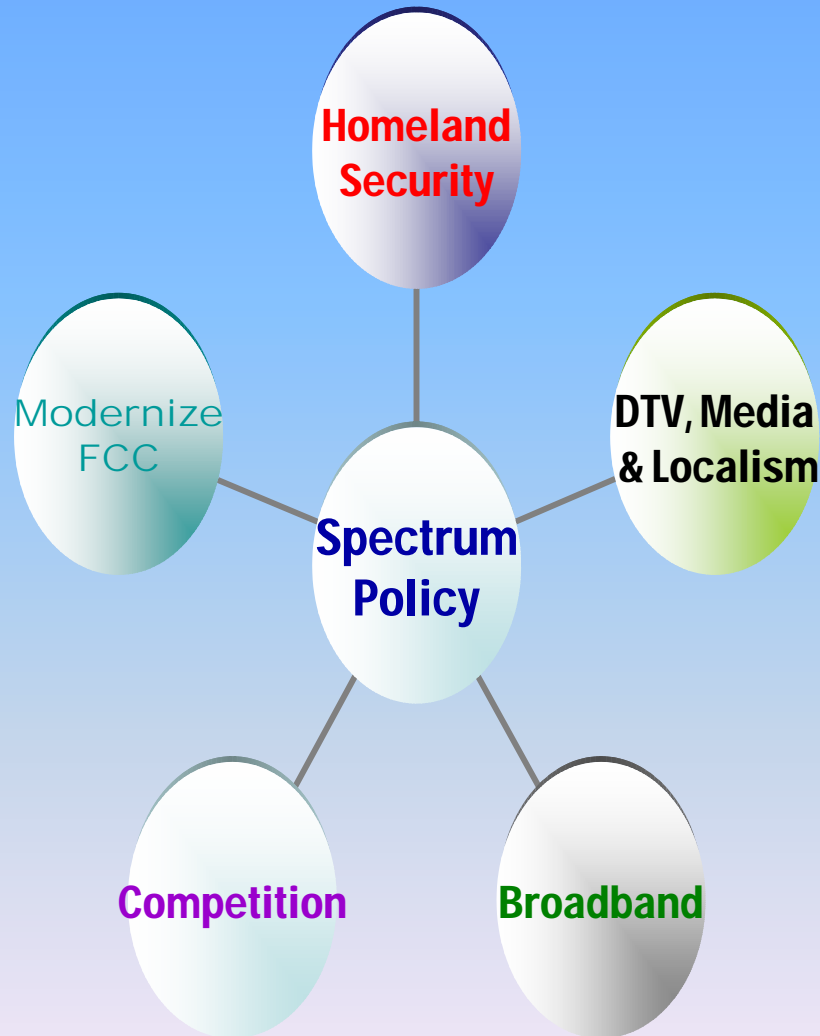
Facilitate the highest and best use of spectrum domestically and internationally to promote the growth and rapid deployment of innovative and efficient communications technologies and services.

- **Performance Goals:**

- Ensure that spectrum is used efficiently and effectively.
- Facilitate domestic and international deployment of new spectrum-based technologies and services.
- Generally shift from rigid to flexible policy models.
- Promote ease of access to spectrum by more users.



Task Force Objectives: Connect to Other Strategic Policy Goals





SPTF Objectives and Key Functions

- **Implementation**
 - Facilitate and coordinate the implementation of substantially all of the SPTF Report's recommendations, focusing especially on how they further other FCC initiatives (broadband, competition, homeland security, media/DTV, modernize FCC).
 - Assist in consideration of SPTF Report's recommendations in the Executive Branch and in Congress.
- **Outreach and Feedback**
 - Maximize external and internal transparency of spectrum-related initiatives.
 - Facilitate wide awareness and input into implementation of SPTF recommendations and new initiatives by the public, government (internationally and domestically) and experts in various fields.
- **Research and Development**
 - Foster collaboration across disciplines (technical, economic, legal, etc.) and institutions (academia, government, industry, etc.) to implement and improve upon SPTF recommendations, and to develop additional recommendations.





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Ongoing FCC Proceedings

Full-Speed Implementation

- Eliminating Barriers to Secondary Markets in Spectrum
- Allocating Additional Spectrum for Unlicensed Devices
- Improving Access to Spectrum in Rural Areas
- Studying Receiver Interference Immunity Performance Specifications
- Teeing up Interference Temperature Concept and Proposals
- Facilitating Smarter Radio Technologies
- Taking Action in Service/Band Specific Proceedings





Increasing Access to Spectrum Through Secondary Markets

Update: Commission's *Secondary Markets* decision

- Authorizes spectrum leasing in broad array of wireless radio services;
- Adopts streamlined processing for certain categories of license transfer and assignment applications; and
- Seeks further comment on additional steps to improve the functioning of secondary markets, and to facilitate access to spectrum by new technologies that make “opportunistic” use of licensed but unused spectrum.

✓ **Comments & Reply Comments received January 2004**



Increasing Access to Spectrum Through Secondary Markets



- FCC's decision reverses 1963 *Intermountain Microwave* policy
 - *Order* replaces old facilities-based standard, decoupling spectrum rights and control of infrastructure
 - Commission determined that, as applied to spectrum leasing, the old standard imposed unnecessary barriers to efficient and effective access to spectrum resources
 - Out of step with the flexible, market-based spectrum policies that Congress and the Commission have developed in recent years
- Refined standard allows licensees to lease spectrum usage rights to other facilities-based users
 - No need for prior Commission approval if the licensee continues to exercise effective working control over the use of the spectrum it leases
[Rules Effective February 2004]
 - Streamlining of other transactions involving transfers of control
[Rules Effective June 2004]





Update: Additional Spectrum for Unlicensed Devices

Ultra-wideband Communications Systems (3.1-10.6 GHz)

- Ongoing testing and review
- Further Proposed Rules March '03; Record Closed August '03

Below 900 MHz (TV bands) and in 3 GHz Bands (3650-3700 MHz)

- Notice of Inquiry, December '02; record closed May '03

5 GHz (U-NII)

- Proposed Rules June '03; record closed October '03
- **Final rules adopted/released November '03**

90 GHz

- Final rules adopted October '03





Update: Other Broad Proceedings

Improving Access to Spectrum in Rural Areas

- WT Docket No. 02-381
- Notice of Inquiry, December '02; record closed February '03
- Proposed Rules adopted October '03; record closed January '04

Receiver Interference Immunity Performance Specifications

- ET Docket No. 03-65
- Notice of Inquiry March '03; record closed August '03

Interference Temperature

- ET Docket No. 03-237
- NOI & NPRM Nov. 2003
- **Comments due April 5, '04; Reply Comments due May 5, '04**

Smart Radio Technologies

- ET Docket No. 03-108
- NPRM Released December 30, 2003
- **Comments due May 3, '04; Reply Comments due June 1, '04**





Implementation

Service/Band Specific Proceedings

4.9 GHz (Public Safety)

- Final rules adopted May 2003.

70-90 GHz (Broadband, Pencil-Beam Communications)

- Final rules adopted October 2003.

2.5 GHz Wireless Broadband (MDS/ITFS)

- Proposed rules adopted March 2003.

Advanced Wireless Services (3G)

- Service/Auction Rules Adopted October 2003.
- Additional spectrum allocations proposed.

800 MHz (Public Safety)

- Proposed rules adopted March 2002, additional analysis and comments 2003.

DTV Periodic Review





Outreach and Feedback

- Public Workshops, Forums, and Showcase Events
- Chairman and Commissioner Speeches
- Public Comments
- International Exchanges
- FCC University (“In-Reach”) and other Collaborative Information Exchanges
- SPTF Web Site, E-Mail (SPTFInfo@fcc.gov) and 202-418-SPTF
 - **New Online Tracking Tool**





Research & Development

- **OET's Columbia Lab; Enforcement Bureau Field Engineers and Monitoring Equipment**
- **Commission's Technological Advisory Council (TAC):** Focus on Interference Measurement and Management (July 2003)
- **Staff Working Papers:**
 - Kwerel & Williams (OSP 2002); Bykowsky & Marcus (TPRC 2002); Carter, McNeil & Lahjouji (OSP 2003); Margie (TPRC 2003)
- **Establishing and Nurturing Strategic Relationships and Collaboration Opportunities**
 - DARPA, National Science Foundation, National Academies' CSTB, NTIA
 - Labs, Universities & Other Agencies
- **Inspiring Study and Debate at Universities, Think Tanks and Around the World**
 - Multi-Disciplinary Research Clearing House





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The Road Ahead

Full-Speed Implementation – No Slowing Down!

Getting from “Inquiry to Action” (i.e., Charting the Critical Path):

- Rural NOI → Rural NPRM → Report & Order
- Secondary Markets FNPRM → 2nd Report & Order
- Unlicensed NOI → NPRM → Report & Order(s)
- Receiver Specifications NOI → Constructive Record → TBD
- Cognitive Radio NPRM → Constructive Record → Report & Order
- Interference Temperature NOI/NPRM → Constructive Record → TBD





The Road Ahead

Full-Speed Implementation – No Slowing Down!

- Transitioning to Newer Policy Models & Improving Access
 - **Band-by-band, service-by-service**
 - Wireless Broadband in 2.1 & 2.5 GHz R&O
 - Wireless Broadband above 5 GHz NPRM
 - 3650-3700 MHz former government spectrum
 - Streamlining and Harmonization of Antiquated Service Rules
 - Consideration and Application of Task Force Principles and Concepts, Plus Other Innovative Approaches
 - Spectrum Audits and Auctions



Digital Broadband
Migration

Spectrum Policy

2010-2015
Spectrum

Security

Competition

Media

Broadband



Thank you!

For more information:

 [**http://www.fcc.gov/sptf**](http://www.fcc.gov/sptf)

