

# Telecommunications Laws, Regulations, and Organizations

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**USTTI**

**Radio Frequency Spectrum Management Course**

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**11:15pm - 12:15pm**

# Outline

- Why laws and regulations in spectrum management?
- What is being regulated? (What is “spectrum”?)
- Elements of Successful Laws and Regulations
- Basics of U.S. Telecommunications Law

# **Why Do So Many Laws and Regulations Govern Spectrum Management?**

**Need, objectives,  
costs and benefits**

# Spectrum Regulation

- Why government regulation? Possible reasons:
  - Spectrum is scarce
  - Protection from harmful interference
  - Efficiency = more users
  - Highest value users
  - Access for many/more



# Additional Possible Reasons to Regulate (Discuss)

- Additional possible reasons:
  - Promote investment and economic development
  - Create affordable service for all
  - Ensure competition
  - Protect national defense and public safety
  - Preserve free flow of information
  - Protect public from inappropriate material
  - Make money for government

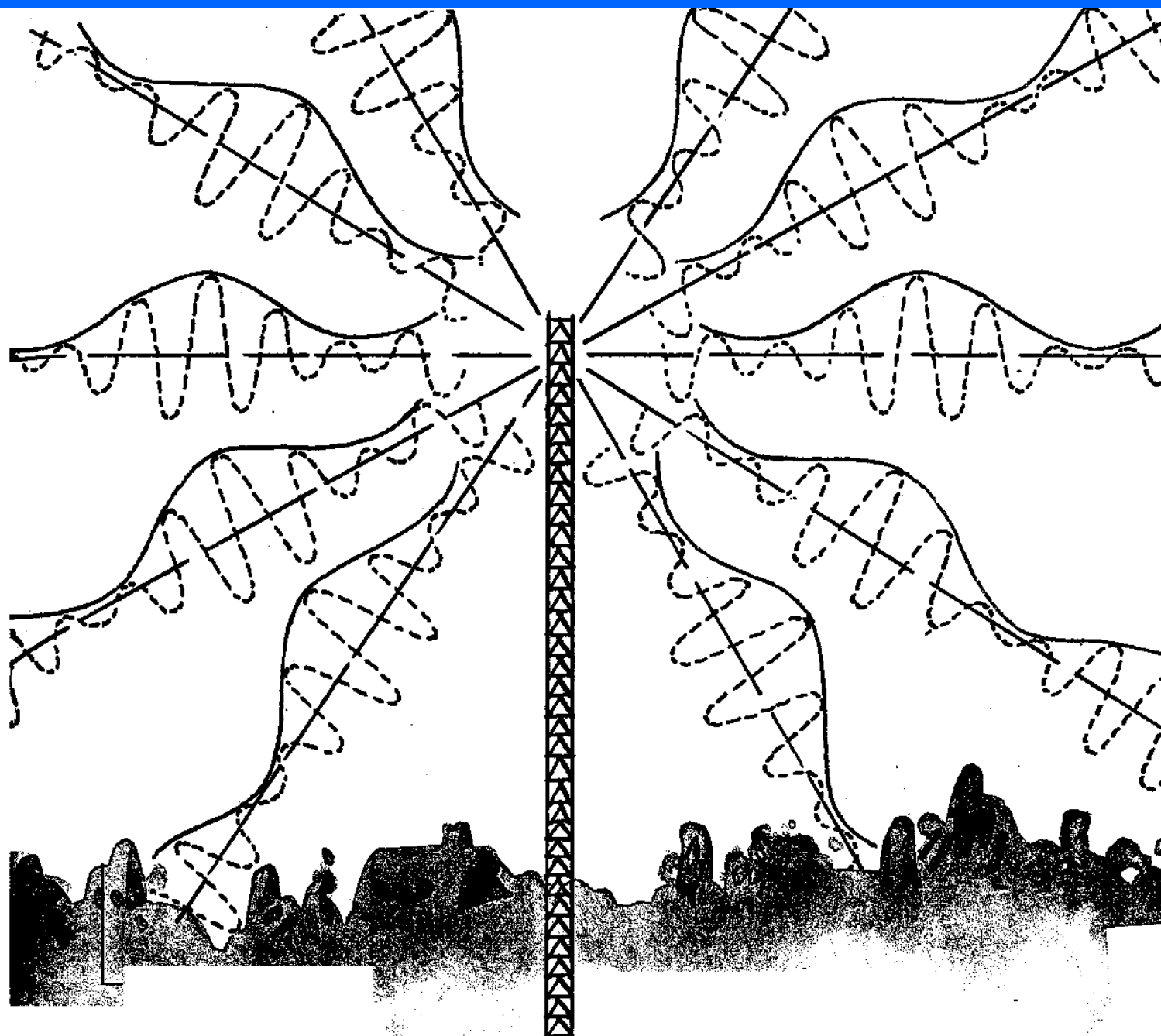
# Costs of Regulation

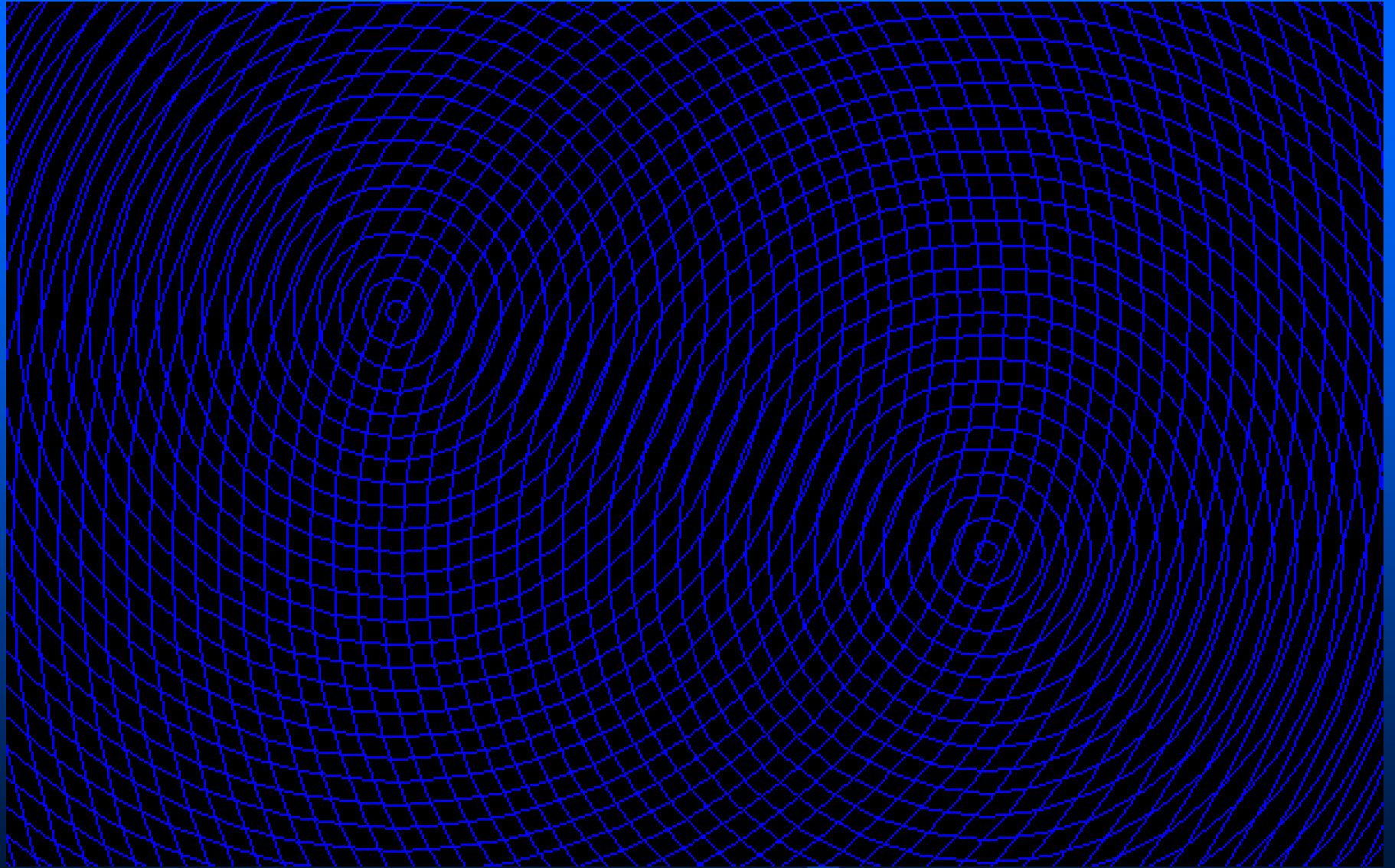
- Incorrect judgments
  - From an often inflexible and centralized process
- Slow and expensive decision-making
  - Delays services and adds costs
- Actual cost of regulating
  - Increases tax burden and prices
- Distortion to market
  - Leads to inefficient results
- Interference with free speech

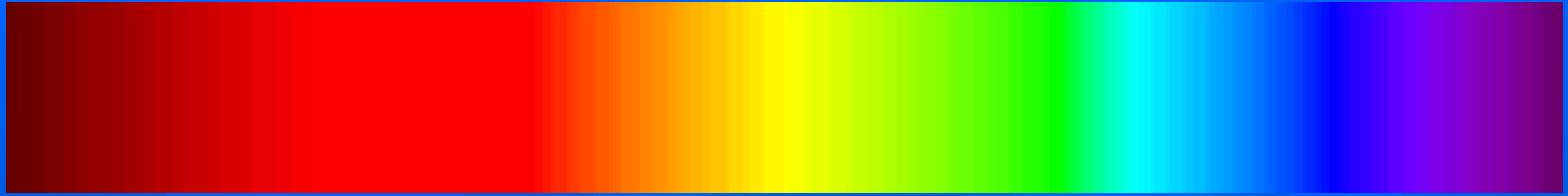
# What is being regulated?

(What is being managed?)

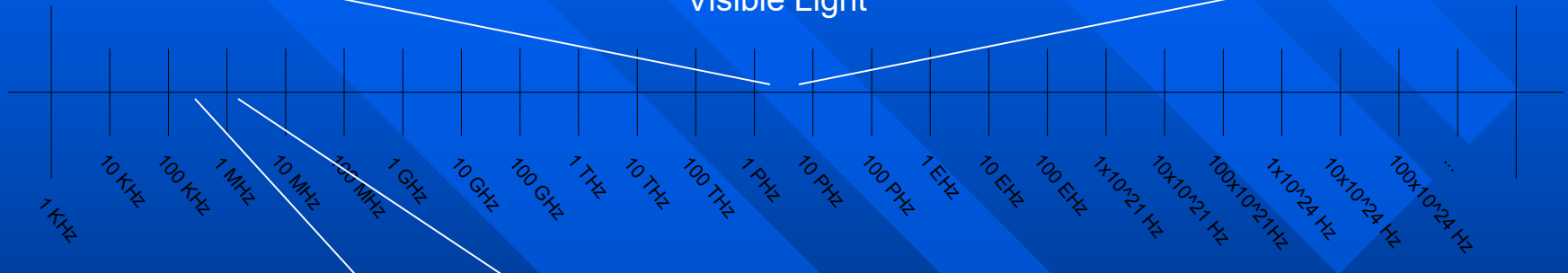
- Does spectrum even exist?
- Government management of spectrum rights is a legal exercise



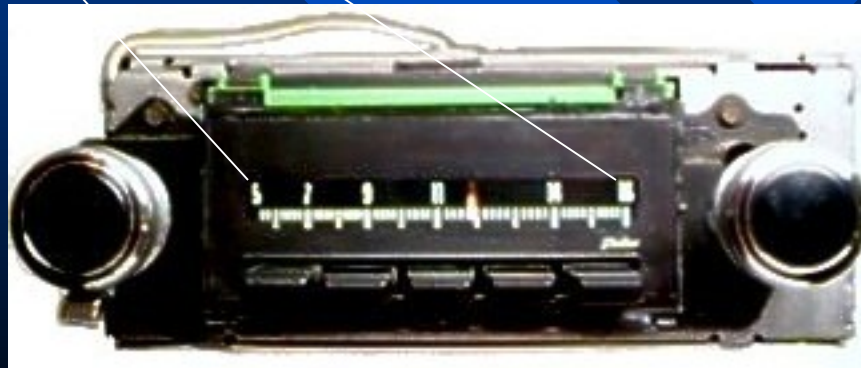




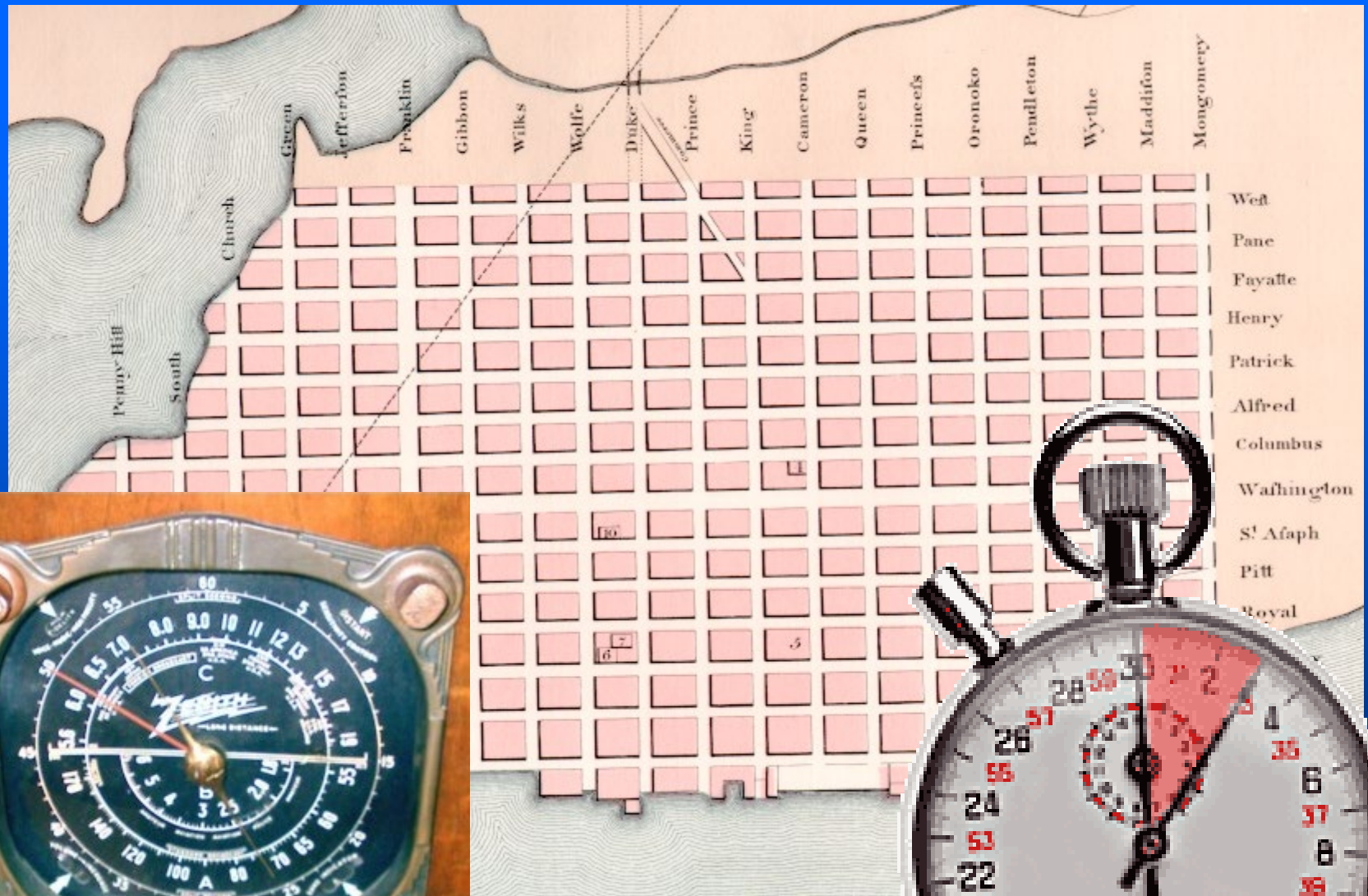
Visible Light



AM Radio







# UNITED STATES FREQUENCY ALLOCATIONS

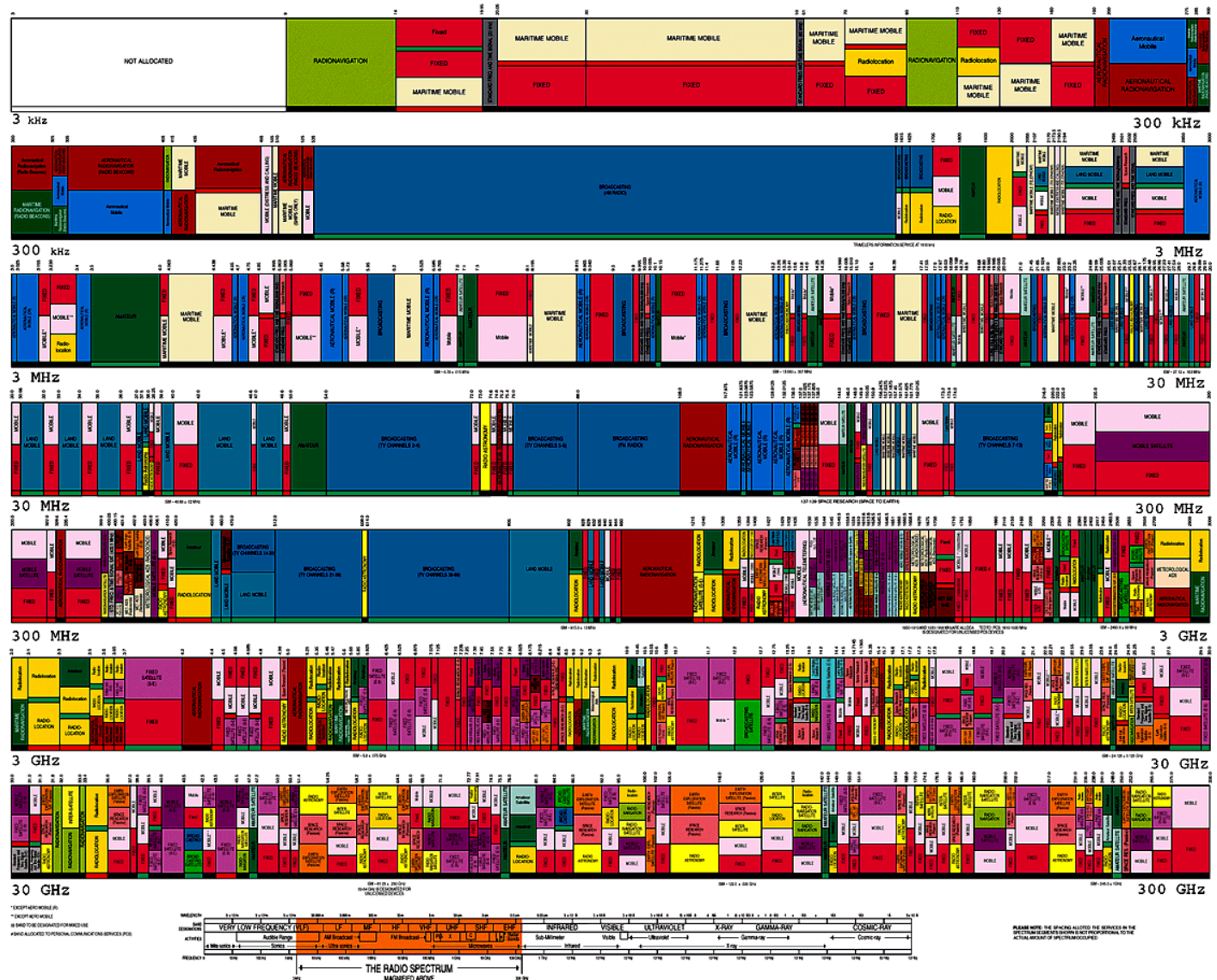
## THE RADIO SPECTRUM

### RADIO SERVICES COLOR LEGEND

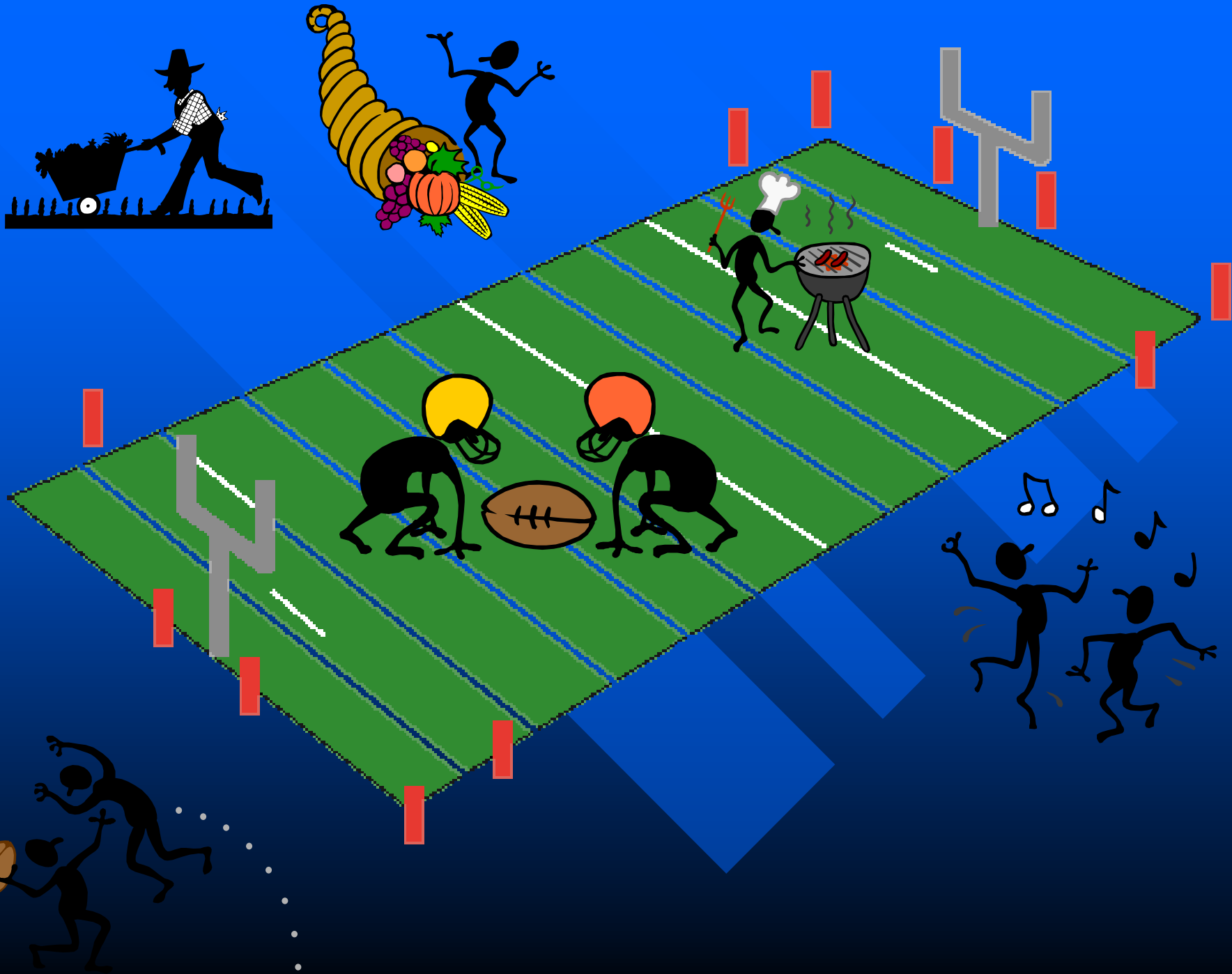

### ACTIVITY CODE


### ALLOCATION USAGE DESIGNATION

SERVICE	EXAMPLE	DESCRIPTION
Primary	FIXED	Cable Carriers
Secondary	MOBILE	1st Class with lower class letters
Permitted	BROADCASTING	Capital Letters between oblique strokes







# Review

- Does spectrum exist in nature?
- Is there “ether”?
- Is spectrum tangible or is it a description of something? If a description, what does it describe? Rights to operate?
- Is spectrum like any other resource? Is it like land? A parking lot? A ship channel or a highway?

# U.S. Frequency Assignments - - Licensing

- License: limited rights under express conditions
- Grants access to spectrum and gives right to operate
- Subject to regulatory framework – compare “license contract”
- Miscellaneous
  - No property rights; limited time period but possible renewal expectancy
  - Defined geographic area
  - “De facto” transfer right
  - Power limits, other specifications
  - **Usually technology neutral with no required standard and use flexibility**
    - » For example, no separate GSM and CDMA or 3G and 4G licenses

# U.S. Frequency Assignments: Competitive Bidding

- Permitted since 1993 under section 309(j) of Communications Act where “mutually exclusive” applications
- Assignment-licensing tool only - - alternative to comparative hearings or lotteries
- Not for allocation; no property rights
- Revenue to government, but cannot take revenue into account when determining public interest

# License Exempt Services ("Non-Licensed")

- Generally exist under "Part 15" of the FCC's rules
- Low Power
- Subject to "type acceptance" equipment certification
- General principle that must accept interference and must not cause interference from authorized operations and equipment

# RIGHTS

- Compare license right to property right
  - Right to access and occupy
  - Right to proceeds
  - Right to trade or divest
  - Right to subdivide
  - Right to change service

# Resource and Property Analogies

- Possibly analogous resources:
  - Real property
  - Parking Lot
  - Airline landing slots
  - Grazing Land
  - Oil (non-renewing)
- Government or private control?
- Regulation resources, such as through zoning.

# Market Mechanisms that Follow Property Model

- Competitive bidding (Auctions)
  - To assign new licenses
  - To allocate spectrum?
- Flexibility (More decisions made by operator)
  - Re technology
  - Re service offering
- Leasing
- Trading



# Property/Market Model Criticisms

- Over emphasis on money
- May cede too much control to user
- Difficult to apply to non-commercial spectrum
- Market failures may lead to under-use of spectrum
  - Speculation
  - Warehousing
  - Resistance to sharing
- Difficult to apply to non-commercial spectrum

# Commons Model

- Spectrum is not a “thing”
- Spectrum is not necessarily scarce
- Interference is receiver error, not natural phenomenon
- Technology offers sharing solutions that promise relatively open access:
  - Low power operation
  - Mesh network
  - Intelligent application of protocols, etiquette

# Commons/Open Access Approach Criticisms

- Feudal commons caused tragedy: No limit on use of resource not a true commons.
- Does not provide incentives to users to be efficient and to invest.
- Cannot be uniformly applied to all spectrum

THE

LAW

# Elements of Successful Laws and Regulations

- Transparency
  - Public Input/Consultations by All Interested Parties
  - Publication/Explanation of Decisions
- Competency
  - Independent Regulator
  - Skilled Staff
  - Unbiased and Ethical Decisions
- Confidence
  - Appeal to Independent Body
  - Consistency and Rulemaking and Enforcement
  - Finality and Enforceable Rights

# Roles of Regulators and Regulated

- Government
  - Lawmakers: Basic law and policy
  - Regulators: Details and flexibility
  - Arbiters: Review decisions
- Private sector:
  - Operators: Manage service, including investment and service levels
- Others
  - Standards bodies
  - International Organizations

# Hierarchy of U.S. Laws

- Constitution -- *Highest law of the land*
- Treaties – *Second only to constitution*
- Legislative Acts – *Must be constitutional*
  - Passed by Congress; signed by President
- Executive (Presidential) Orders and Memoranda  
*Must be within presidential authority*
- Regulations (*Laws promulgated by agencies or commissions*)

*Note: All laws subject to review by courts*

# Evolution of U.S. Telecommunications Laws

- Radio Act of 1912:
  - Licenses for commercial radio stations issued by Commerce Department
  - No limit on number of licenses
  
- Radio Act of 1927/Communications Act of 1934/Telecommunications Act of 1996 (47 U.S.C.)
  - Establishment of independent commission
  - Public interest standard
  - Limited term license
  - Commission has authority over radio use, except government owned and operated stations (which are under authority of President)



# Evolution of U.S. Telecommunications Laws

- Communications Act (47 United States Code)
  - Title I Authority and Functions
  - Title II Common Carriage
  - Title III Radio Regulation
    - » Section 305 reserves assignment of U.S. government owned and operated “radio stations”
  - Additional Titles on administration, cable television, etc.
  - Amendments such as the Telecommunications Act of 1996 and many others, including 47 U.S.C. 309(j) Omnibus Budget Reconciliation Act (1993), allowing auctions.
- Code of Federal Regulations (47 C.F.R.)
  - » Well known “Part 15” allows non-licensed transmissions

# Government Organizations with Telecommunications Functions

- Congress/Congressional Committees
- POTUS; Executive Office of the President
- Federal and Independent Agencies subject to Presidential and Congressional Oversight:
  - NTIA
  - Federal Communications Commission (independent)
  - Federal Trade Commission (independent) ( but not common carriers)
  - Department of Justice -- Antitrust
  - Department of State – International agreements
  - Department of Agriculture (Rural Utilities Service)
- States: Regulatory Commissions; Attorneys General
- International: International Telecommunication Union; Organization of American States, APEC, World Bank, others

# U.S. Federal Communications Commission (FCC)

- Authority only as given by law
- Independent of three major branches of government
- Five commissioners, appointed by President (No more than three from President's political party)
- Subject to Administrative Procedures Act
- Decisions reviewable by court:
  - Must be constitutional
  - Cannot be “arbitrary and capricious”

# FCC Regulatory Mission

- Regulate interstate and foreign commerce in communications.
- Make communication services available – so far as possible – to all U.S. residents without discrimination.
- Ensure a rapid, efficient, Nation-wide, and world-wide wire and radio communication service
- To promote competition and reduce regulation in order to secure lower prices and higher quality services
- To encourage the rapid deployment of new telecommunications technologies.

# National Telecommunications and Information Administration

- NTIA Administrator is an Assistant Secretary of Commerce, but serves as president's principal adviser on telecommunications and information
- President's authority spectrum held by Administrator, through Secretary of Commerce, advised by Interdepartment Radio Advisory Committee (IRAC)
- Administers Broadband Grants
- Responsible for "FirstNet" – Public safety wireless licenses and grant program
- Has research laboratory – Institute for Telecommunication Sciences

# What Lawyers (and Economists) Conclude

- There is no such thing as spectrum.
- There is only spectrum management.
- Spectrum management creates and enforces rights.
- Government spectrum management is the law.