

**Briefing to Federal Communications Commission  
Wireless Telecommunications Bureau**

Northpoint Technology

October 18, 2002

## Topics in Today's Briefing

- MVDDS sharing with NGSO FSS
- MVDDS sharing with DBS
- License areas

## Sharing Limits Glossary

Type of limit	Where measured	Factors included
EPFD “Effective Power Flux Density”	Measured indirectly at the victim system	All factors of both systems
PFD “Power Flux Density”	At any point within the service area	Transmission system characteristics
EIRP “Effective Isotropic Radiated Power”	At the transmitter	Raw power of transmitter only – no system characteristics

Of these, EPFD is the most comprehensive: Guaranteeing a specific protection while affording the greatest flexibility in how to achieve the result.

## Sharing With NGSO FSS

- Northpoint supports the Commission's decision to establish NGSO and MVDDS systems as co-primary operators in the 12.2 – 12.7 GHz band.
- Northpoint also supports the EPFD limits adopted by the Commission.
- However, two of the additional technical sharing rules are unnecessarily restrictive and should be eliminated:
  - Power Flux Density (PFD) limit of -135 at 3 km.
  - The requirement of a 10 km separation between MVDDS transmitters and NGSO user terminals.

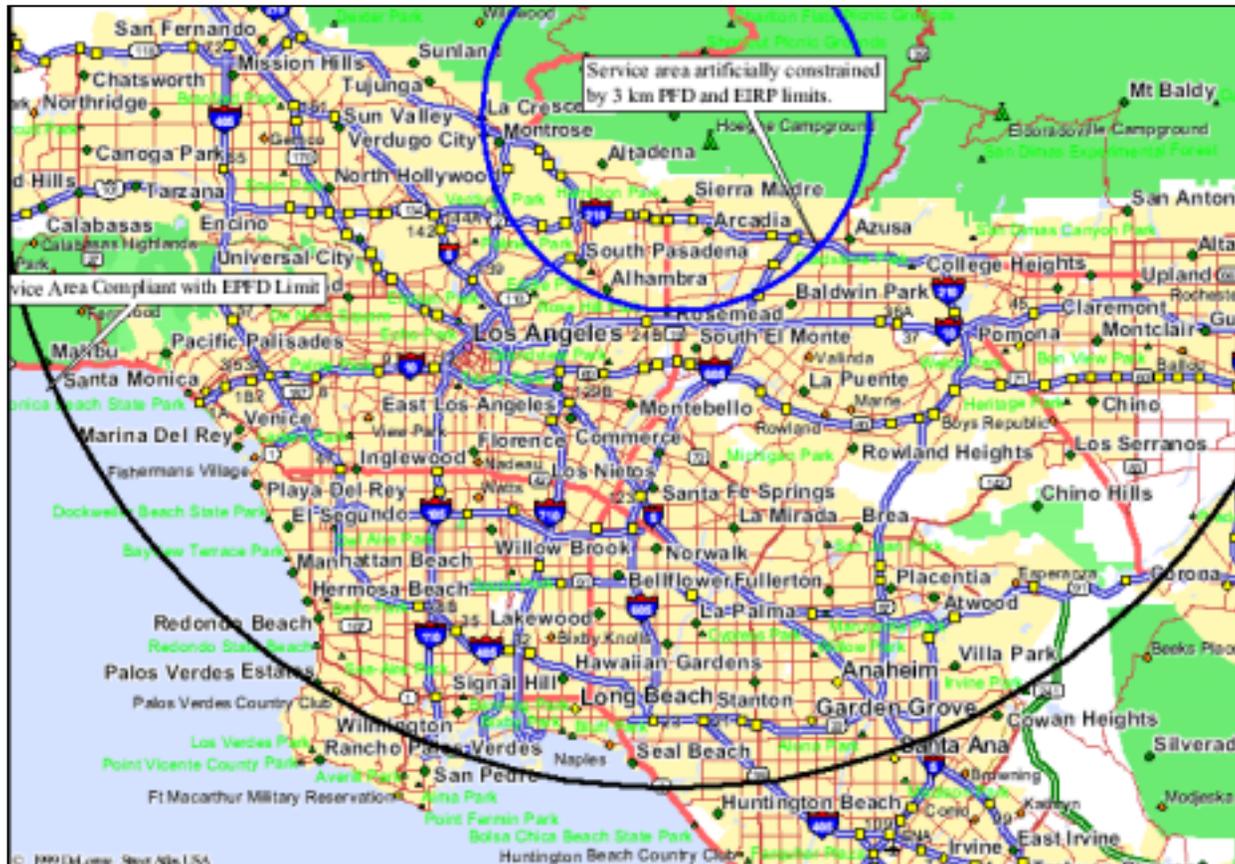
## NGSO – MVDDS Sharing Overview

- The FCC sharing decision rested strongly on the ability of NGSO systems to use “frequency diversity” to mitigate potential interference from MVDDS systems.
- SkyBridge stated that it needed additional protection from “saturation” of its user terminal even if it used frequency diversity.
- The PFD and separation rules apparently address this request rather than the general case of NGSO-MVDDS sharing.
- SkyBridge user terminal examined:
  - Claimed performance requirements never substantiated – SkyBridge stated this data was “proprietary.”
  - SkyBridge sought waiver for sub-par terminal.

## Impact of 3 Km and 10 Km Limits

- Imposition of a PFD limit (in addition to the existing EPFD limit) severely limits MVDDS deployment with no benefit to NGSO.
- Current 3 km PFD limit precludes service areas larger than 10 miles.
  - Severely constrains deployment in both urban and rural areas.
  - Required far more emitters increasing cost and complexity.
- Current 10 km separation requirement could eliminate possibility of MVDDS service in all major cities.
  - The deployment of a single NGSO user terminal would prevent MVDDS installation in a 10 km radius.

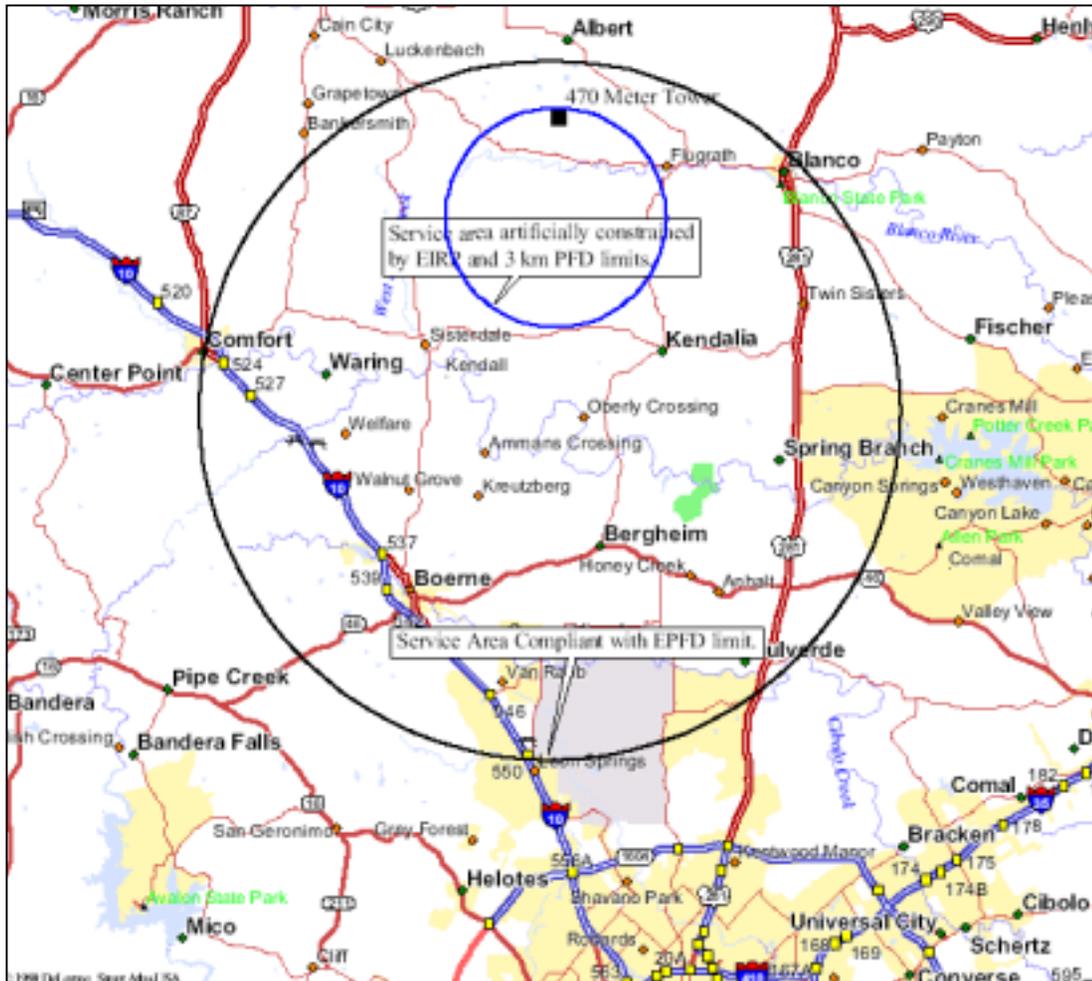
# EIRP and PFD Limits Severely Constrain Deployment



EIRP and PFD limits constrain deployment with no corresponding benefits.

Significantly more towers will be needed to cover equivalent service area.

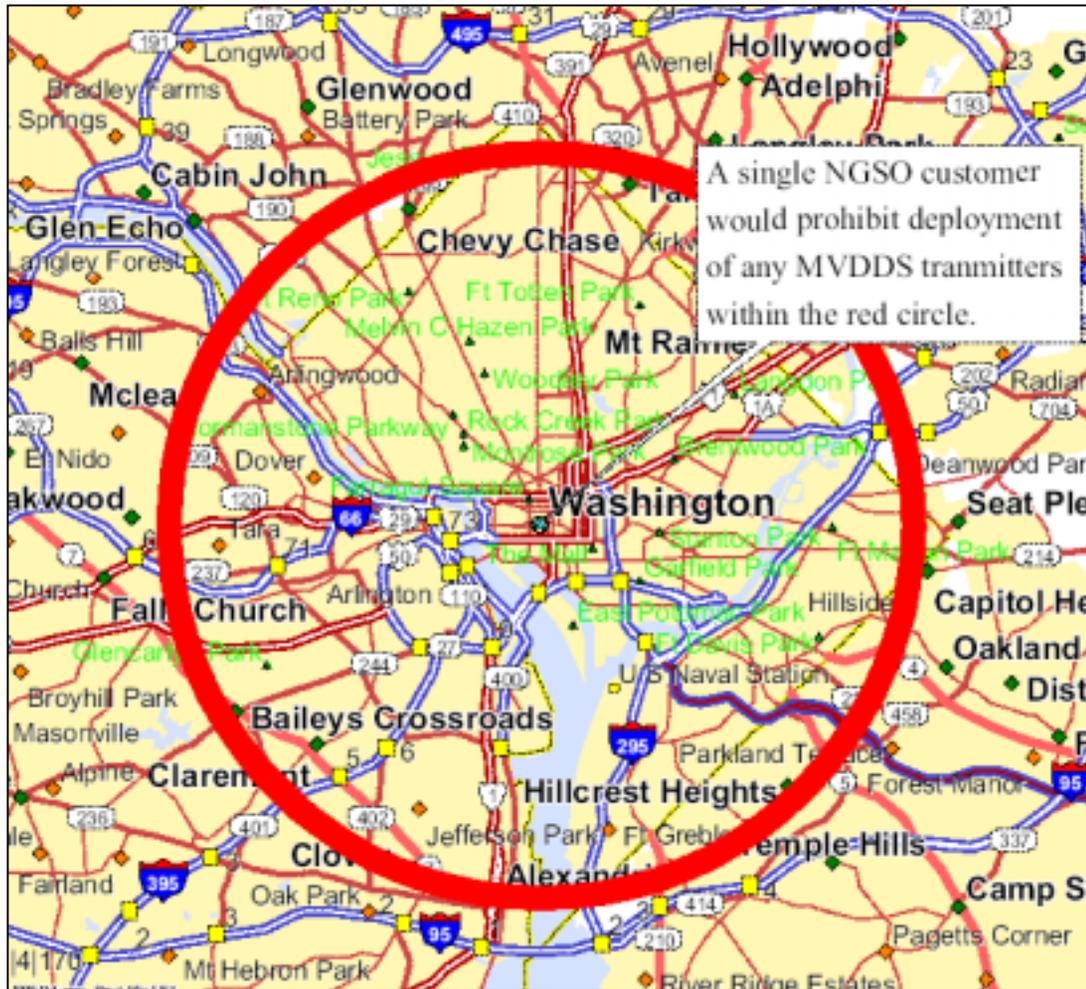
# Rural Deployment Threatened



EIRP and PFD limits constrain deployment with no corresponding benefits.

Compliance with rules would require establishing towers in areas that are unpopulated – an uneconomical choice at best.

## Urban Deployment of MVDDS Threatened



The 10 km separation rule could preclude deployment of MVDDS.

## No Support In the Record for the Limits Adopted

- No interference protection criterion for NGSO was ever defined.
- Without a protection criterion, there is no objective way to establish a PFD limit for protection – rules are arbitrary.
- 3 km PFD limit:
  - The “PFD limit” of -135 dB is more stringent than SkyBridge requested for an EPFD of -132 dB. (Paragraph 99)
  - FCC internal analysis never placed in the record. (Paragraph 116)
  - PFD limit solely based upon SkyBridge alleged “saturation” assertion that was never substantiated in the record.
- 10 km separation:
  - No party advocated this rule.

## Claimed Saturation Risk – Not Harmful Interference

- Assuming for argument's sake SkyBridge assertions, detailed analysis does show:
  - Saturation could only occur in less than 1% of the SkyBridge receivers for less than 0.4% of the time, affecting less than 0.004% of SkyBridge transmissions. (Northpoint Letter, Jan 14, 2002)
- This level of increased outage (0.004%) cannot be considered harmful interference.
- Saturation near the Northpoint transmitter can be easily cured with an LNB swap.
- Existing EPFD limits are completely adequate to provide needed protection – no need for additional PFD and separation limits.

## Sharing With DBS

- The Commission's current EPFD limits should not be altered.
  - Commission correctly concludes that no harmful interference would take place at the specified EPFD limits.
- Effective Isotropic Radiated Power (EIRP) limit does not add additional protection.
  - The 14 dBm EIRP limit is based upon “preliminary analysis.”
  - Current EIRP limit would severely restrict deployment of Northpoint in both urban and rural areas, increasing the number of MVDDS transmitters.
  - Belt and Suspenders is the “two-tiered” regulatory approach opposed by all comments in Docket.
  - Even DirecTV agrees that EIRP limits in addition to EPFD limits are unnecessary. (Comments of DirecTV, Mar. 12, 2001)

## EIRP Limit of 14 dBm Is Unsupported in Record

- The 14 dBm EIRP limit was suggested by two paragraphs in the MITRE report referring to a “preliminary analysis” that was never placed in the record.
- MITRE suggests that backscatter interference might occur:
  - “when the DBS antenna has a low look angle”
  - “the DBS antenna would be northeast or northwest of the MVDDS transmitter, and pointed nearly at the transmit antenna”
- MITRE’s “preliminary analysis” is clearly flawed.
  - Based upon the look angles of all DBS satellites serving the CONUS such conditions do not and cannot exist
- No other party raised the issue of back scatter.

# There Are No “Low Look Angles” In the CONUS



Sat 119 has the lowest CONUS look angle of all DBS satellites.

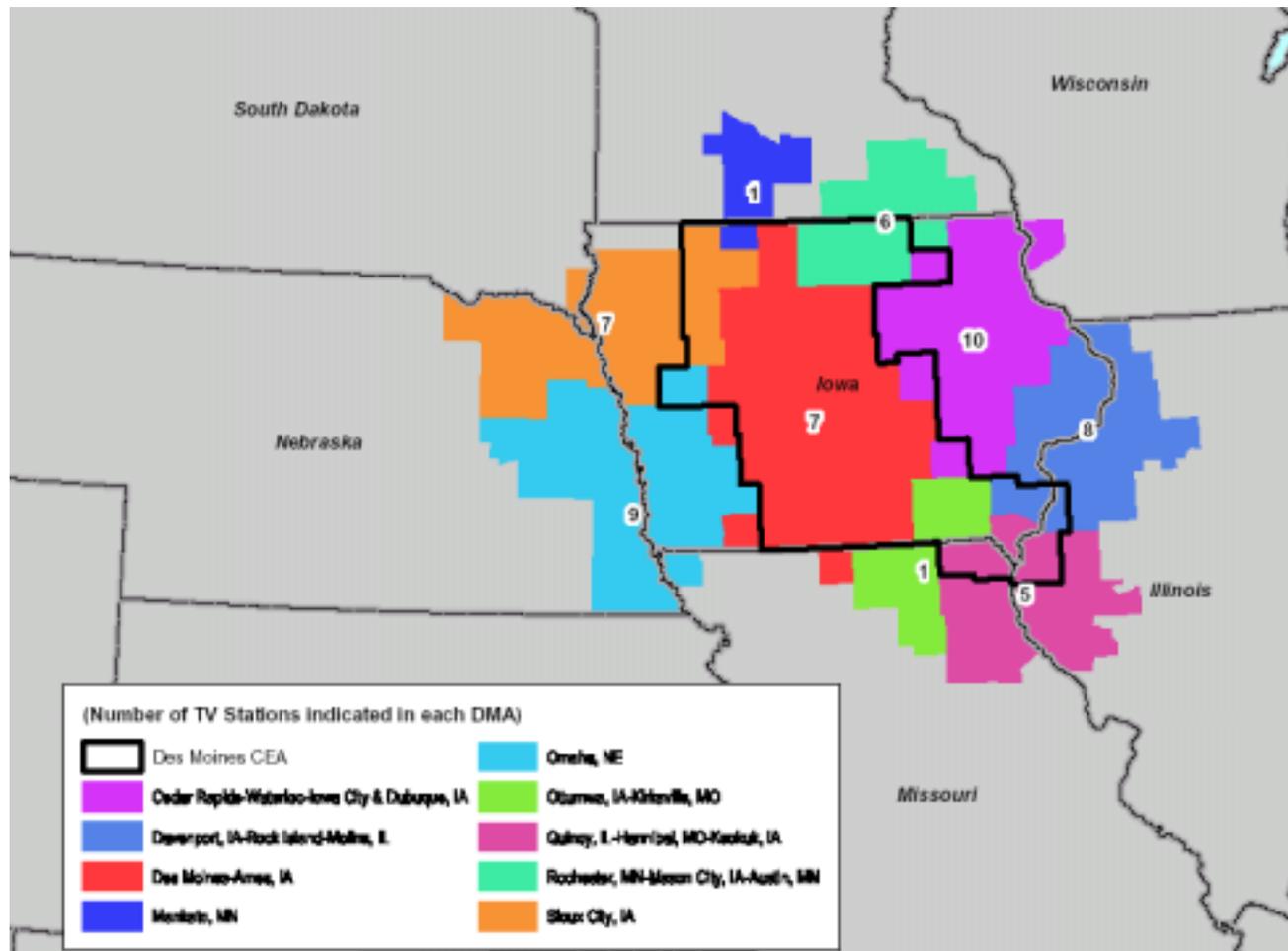
## Overall Concerns

- The FCC's 3 km PFD, 10 km separation and 14 dBm EIRP limits are each based on non-public analysis or data.
- In the case of the MITRE "preliminary analysis," it is unclear that the analysis was even made available to the Commission!
- New Commission rules (and good public policy) prohibit Commission reliance on non-public data and analysis.
- In each case, the limitation exceeds that which was advocated by any party in the record.
- In each case, the limitation severely constrains MVDDS deployment without apparent improvement in the sharing environment.
- These rules should be eliminated.

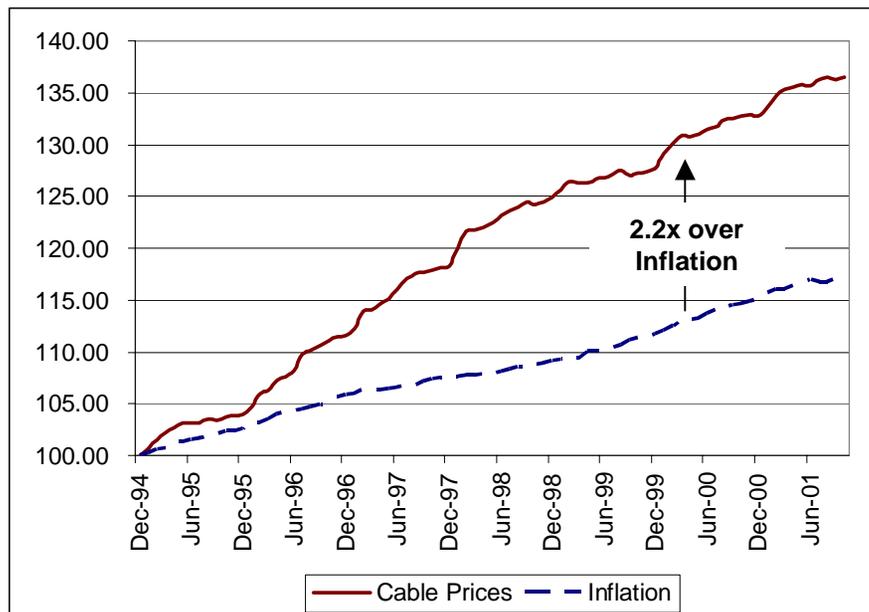
## The FCC Should Adopt DMA License Areas

- FCC should license MVDDS in DMAs and not in the proposed CEAs.
- Choice of CEAs undermines ability of MVDDS to compete with incumbent cable and DBS operators by:
  - Restricting access to the royalty-free copyright which is defined by DMA boundary, not CEA boundary.
  - Making it difficult, if not impossible, both technically and economically to deploy a cable-like system.
    - In some CEAs, over 100 television stations would need to be carried from over 8 different DMAs.

# Des Moines CEA and Nine Associated DMAs



# Cable Competition Is Needed



- Every Annual Report on Video Competition has reported that almost all households in the United States lack “effective competition.”
- The Commission should not adopt rules that will hinder competitive services being offered to the public.

## **Text of FCC Report and Order Commission Rationale Contradicts Imposition of PFD and Separation Rules**

- “NGSO FSS receivers could utilize frequency diversity techniques so that they will not be precluded from operation even in areas where MVDDS operation has already been established.” (Paragraph 108 of the Second Report and Order)
- “Each NGSO FSS operator can make its own business decision whether to employ receivers with sufficient signal discrimination characteristics and/or narrower bandwidth front-ends to enable operation in close proximity to pre-existing MVDDS transmitting antennas.” (Paragraph 109 of the Second Report and Order)

## **Text of FCC Report and Order Rational for 10 Km and 3 Km Limits**

- On the 10 km limit, FCC says:
  - “Because mitigation efforts might not be sufficiently feasible to address potential MVDDS interference to NGSO FSS receivers, we conclude instead that spacing and notification requirements should be employed to achieve optimal sharing conditions.”  
(P. 123)
- On the 3 km PFD limit, FCC says:
  - “we believe that setting the reference distance at 3 km for the specified PFD limit strikes a reasonable balance between limiting the potential for NGSO FSS receiver saturation or reliance on frequency diversity to relatively small and predictable areas.”  
(P. 112)