

BUTZEL LONG  
TIGHE PATTON PLLC

Stephen L. Goodman  
202 454 2851  
sgoodman@butzeltp.com

1747 Pennsylvania Avenue N.W., Suite 300  
Washington, D.C. 20006  
T: 202 454 2800 F: 202 454 2805  
[www.butzeltp.com](http://www.butzeltp.com)

Licensed in Washington, D.C. and Florida

September 7, 2010

Marlene H. Dortch  
Secretary  
Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, D.C. 20554

Re: ADTRAN, INC. Submission in GN Docket No. 10-159

Dear Ms. Dortch:

ADTRAN, Inc. ("ADTRAN") is submitting via ECFS for the public record in this proceeding the attached redacted version of the description of its proprietary simulation model. Pursuant to Sections 0.457 and 0.459 of the Commission's Rules, ADTRAN separately requested that the Commission withhold from public inspection and accord confidential treatment to those portions of the submission that contain commercially sensitive information that falls within Exemption 4 of the Freedom of Information Act.

Please contact the undersigned if you have any questions with regard to this matter.

Sincerely,



Stephen L. Goodman  
Counsel for ADTRAN, Inc.

# Capacity to Burst Rate Simulation

August 2010

ADTRAN Confidential

- Grew out of comments to FCC / National Broadband Plan process
  - Trying to estimate last mile performance for shared technologies
    - HFC
    - Wireless
    - GPON
- Initially developed simulation to demonstrate sensitivity of performance to parameter changes

ADTRAN Confidential

- Performance on a network (or subnetwork) dependent on several factors
  - Total capacity on the network
  - Number of users sharing the network
  - Demand (load) placed on network by users
    - Average demand
    - Distribution of demand
  - Limits (e.g., peak rates)
- Measured performance is determined by *available bandwidth*
  - Bandwidth that isn't being used by others
- For fixed capacity – as average demand rises, available bandwidth (and performance) falls

- Required Capacity

- Roughly proportional to (demand × users) + target rate
- More sensitive to changes in demand
  - Multiplied by # users
  - Higher demand → higher required capacity
- Less sensitive to changes in target rate
  - Higher target rate → higher required capacity

- Performance

- Sensitive to changes in either capacity or demand
- Higher capacity → higher rate
- Higher demand → lower rate

ADTRAN Confidential



REDACTED

REDACTED

ADTRAN Confidential



REDACTED

REDACTED

ADTRAN Confidential



REDACTED

REDACTED

ADTRAN Confidential



REDACTED

REDACTED

ADTRAN Confidential



REDACTED

REDACTED

ADTRAN Confidential



REDACTED

REDACTED

ADTRAN Confidential