

# Submarine Cables: Are We in a New Bubble?

Tim Stronge

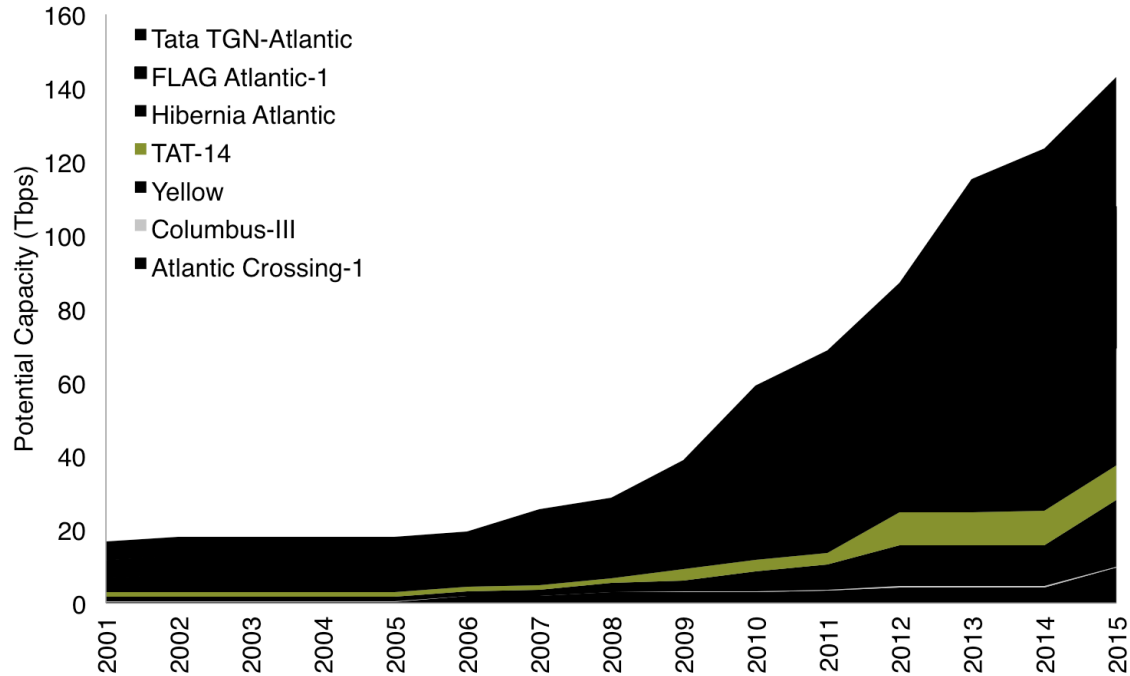
# What caused the bubble & its burst?

- Uncertain future demand
- Irrational exuberance
- Wholesale cable model
- Huge up-front CAPEX
- Big scope for price decreases

# Uncertain Future Demand

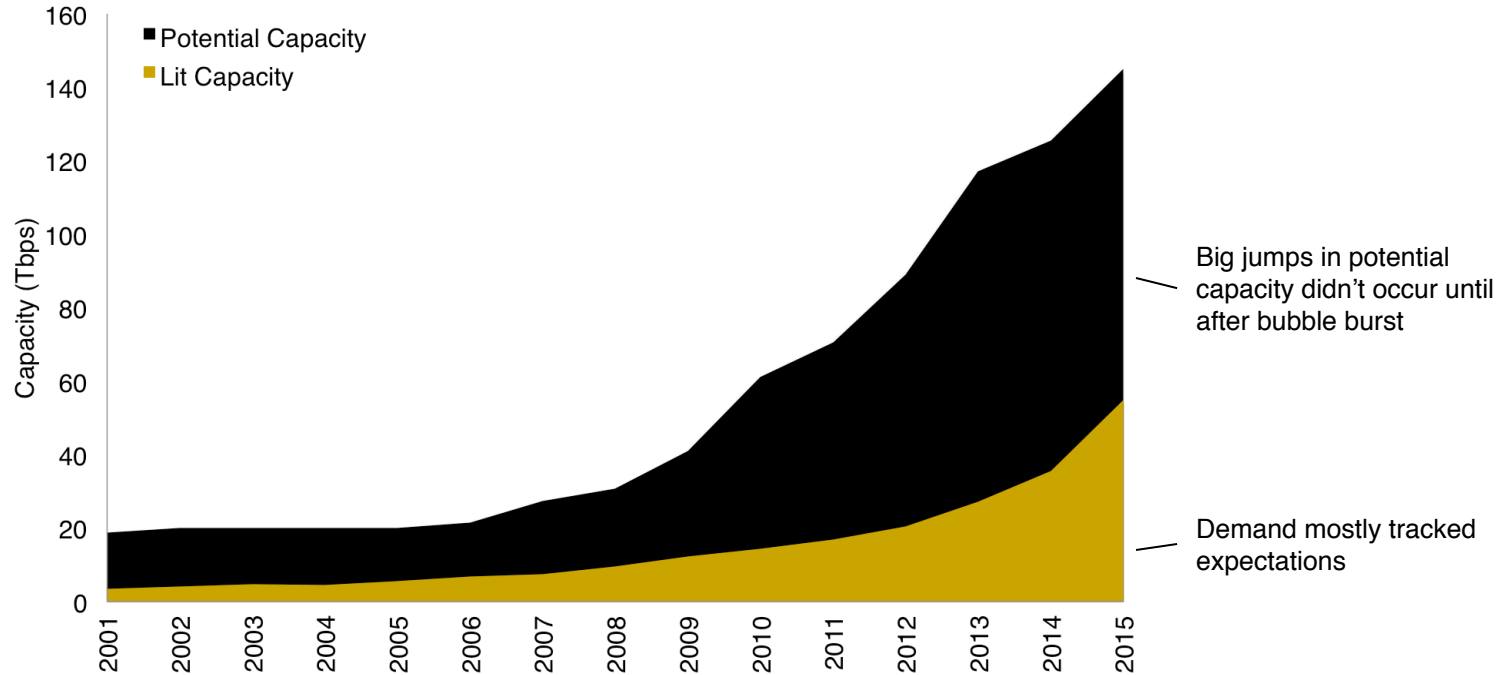
# Onslaught of bankruptcies

## Potential Capacity by Bubble-Era Trans-Atlantic Cable



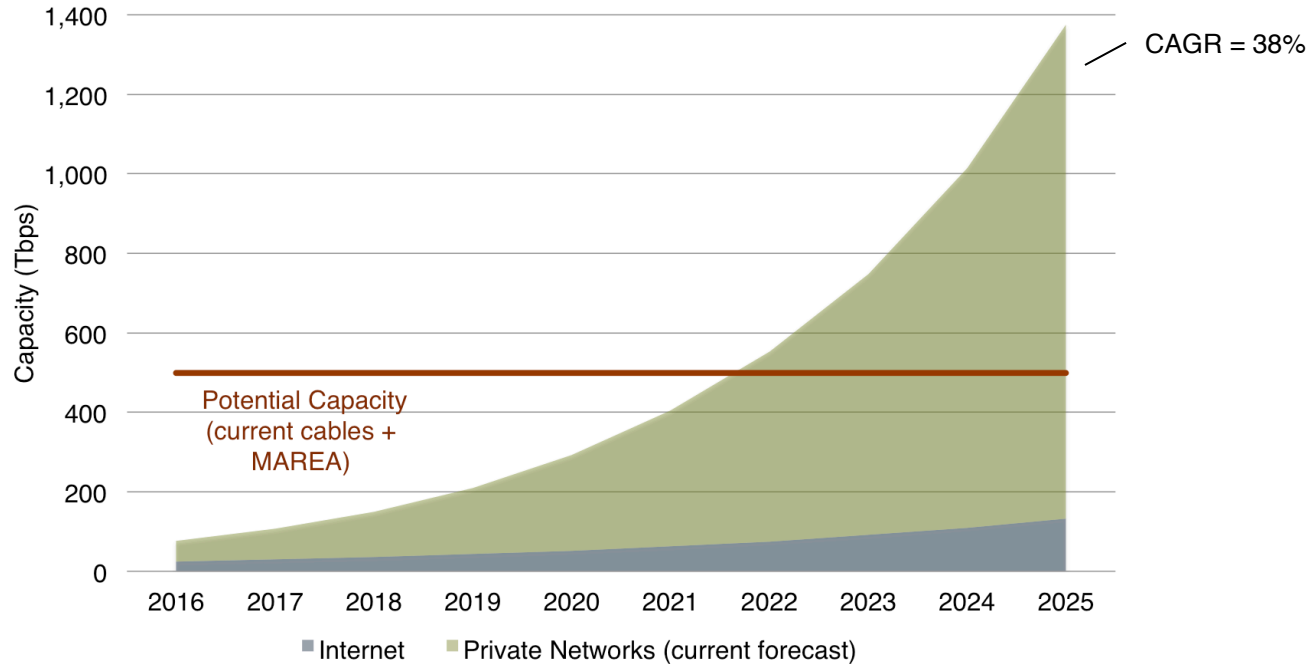
# Demand growth wasn't a major problem

## Lit vs. Potential Capacity on Bubble-Era Trans-Atlantic Cables



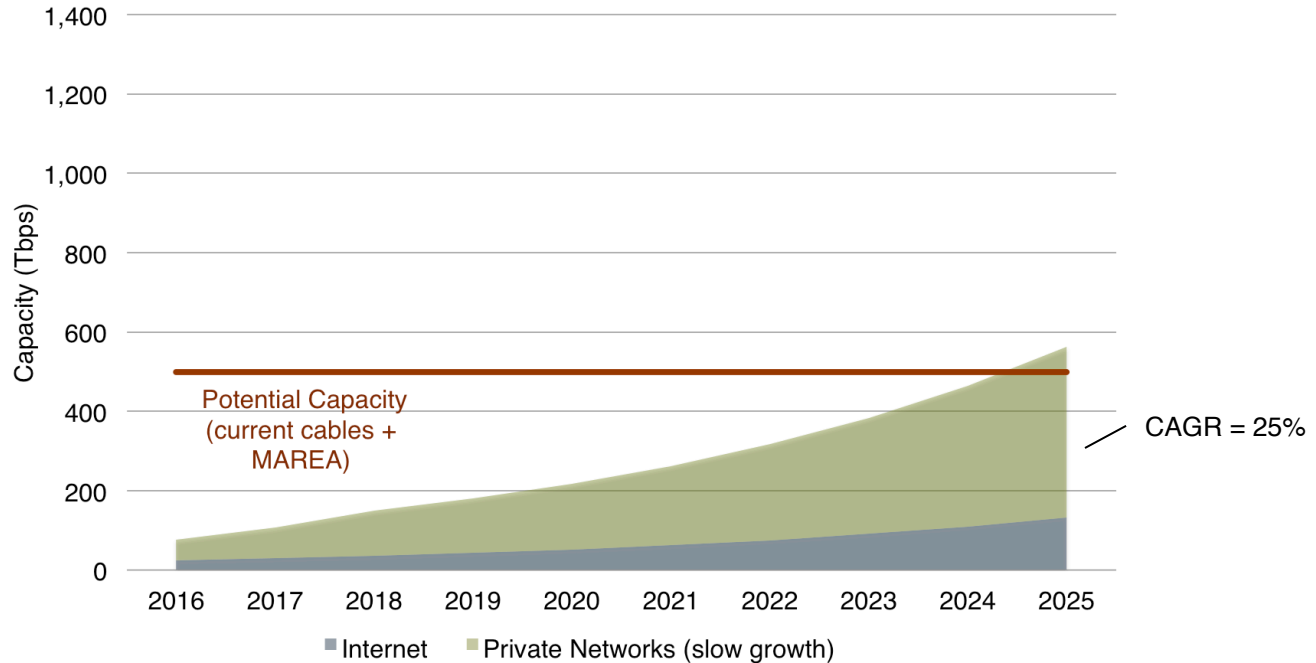
# But what about the future?

## Lit vs. Potential Capacity on All Trans-Atlantic Cables



# But what about the future?

## Lit vs. Potential Capacity on All Trans-Atlantic Cables



# Uncertain Future Demand

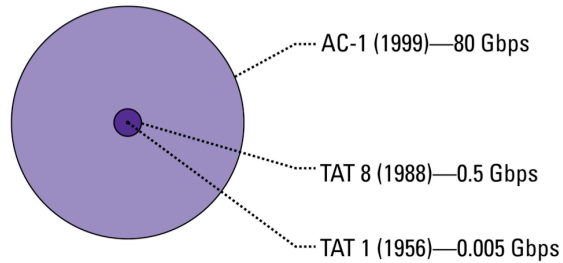
Current worry: Yes



# Irrational Exuberance

# The warning signs were there!

## Undersea Bandwidth Explosion

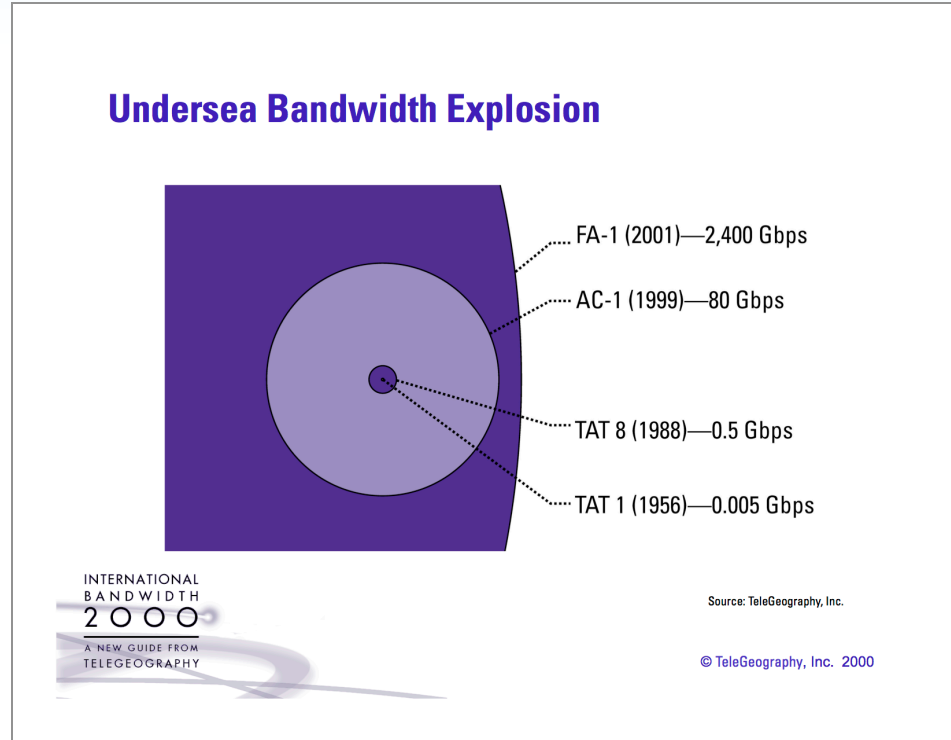


INTERNATIONAL  
BANDWIDTH  
2000  
A NEW GUIDE FROM  
TELEGEOGRAPHY

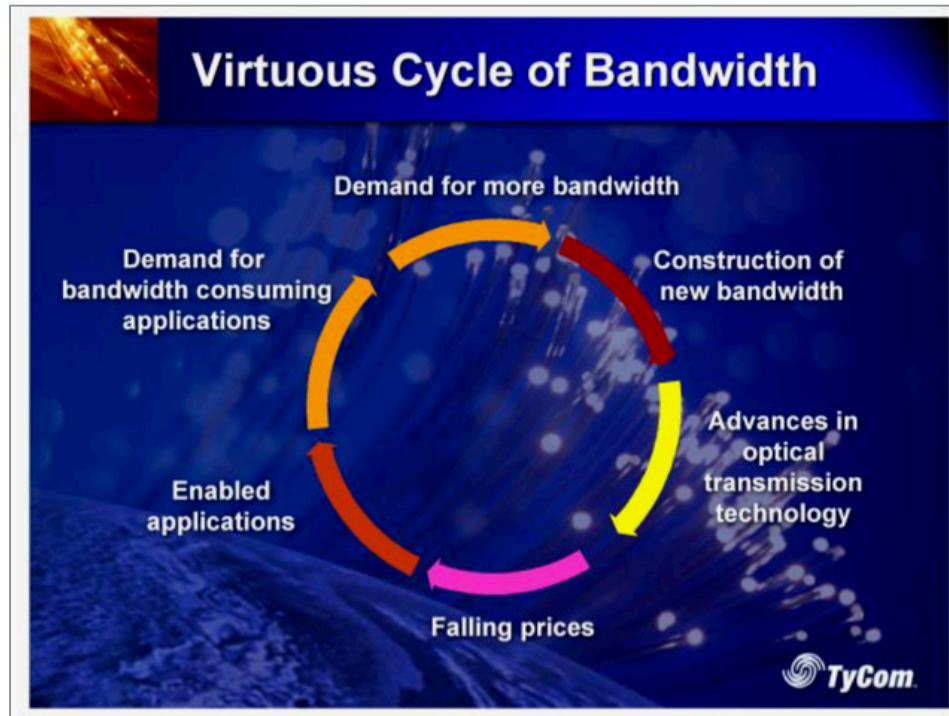
Source: TeleGeography, Inc.

© TeleGeography, Inc. 2000

# The warning signs were there!



# Willing suspension of disbelief



# Irrational Exuberance

Current Worry: No

# Wholesale Model

# Trans-Atlantic builds then vs. now

- Original Bubble
  - Almost ALL capacity built by 3<sup>rd</sup>-party resellers
  - Speculative builds on same routes
  - Wholesalers chasing sales targets
  - Revenue reporting hijinks (treatment of IRUs)
  - Bankruptcy write-offs

# Trans-Atlantic builds then vs. now

- Current Market
  - New cables heavily underwritten by content providers
  - However, 3<sup>rd</sup> party resellers still involved in lots of new cables
  - Addressable market size for these resellers growing more slowly than total market



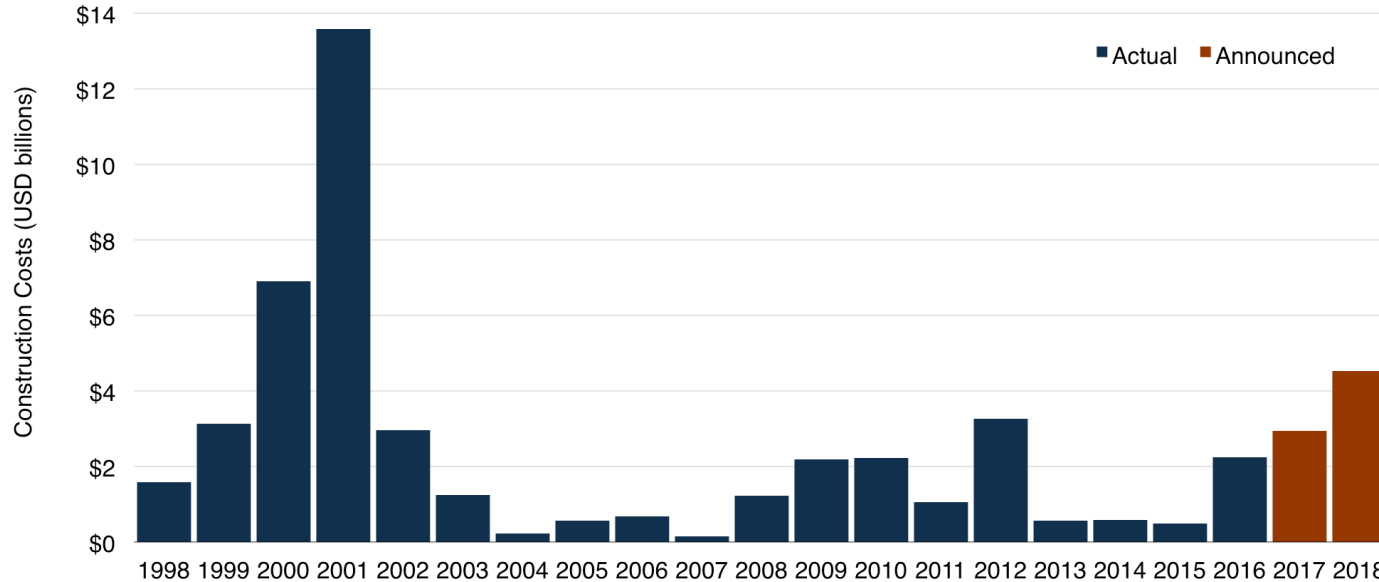
# Wholesale Model

Current worry: Not as much as 15 years ago

**Huge Up-Front CAPEX**

# Huge CAPEX during bubble

Initial Submarine Cable Construction Costs per Year (Globally)



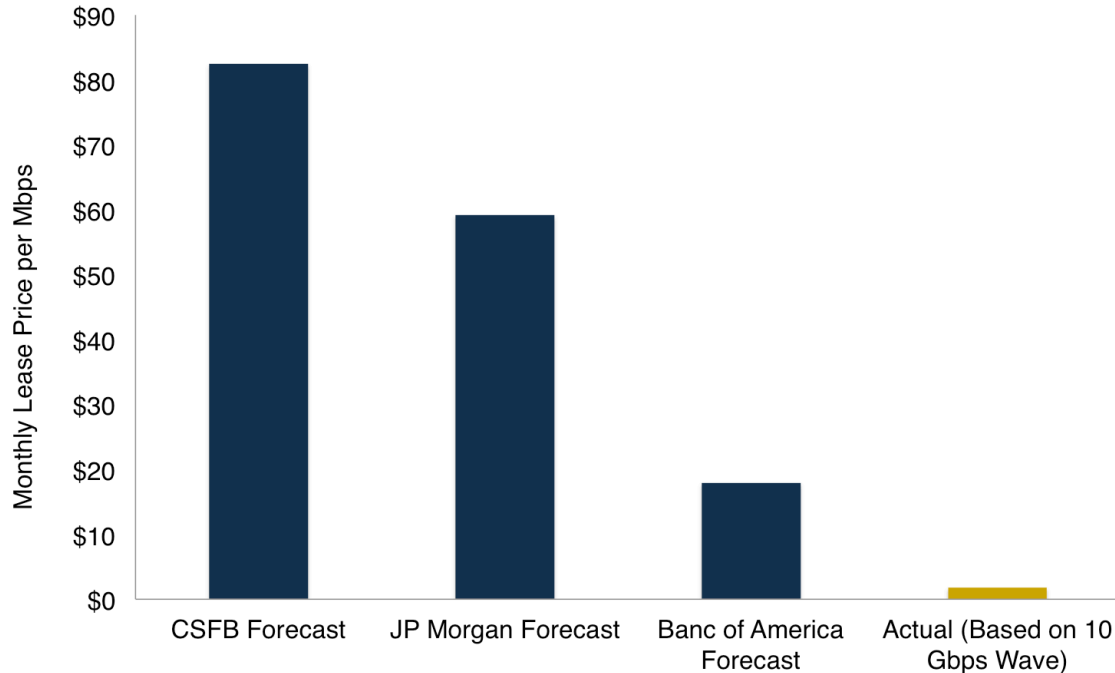
Huge Up-Front CAPEX

Current worry: No

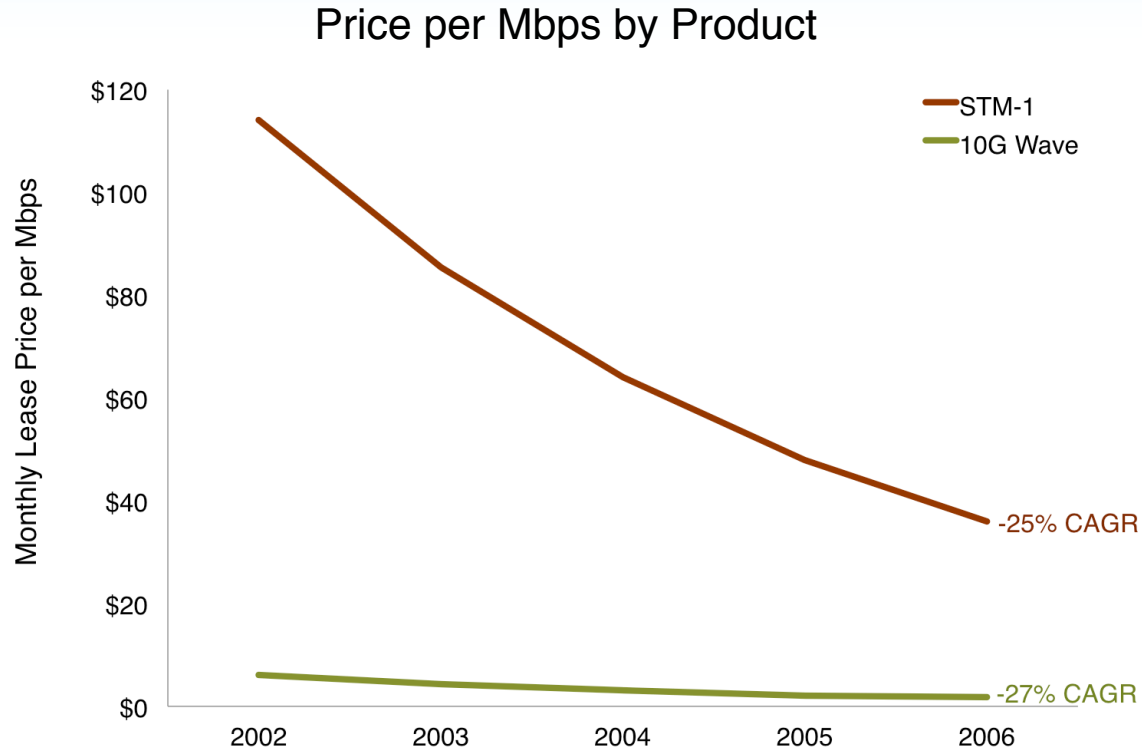
Big Scope for Price Decreases

# Price planning based on STM-1s

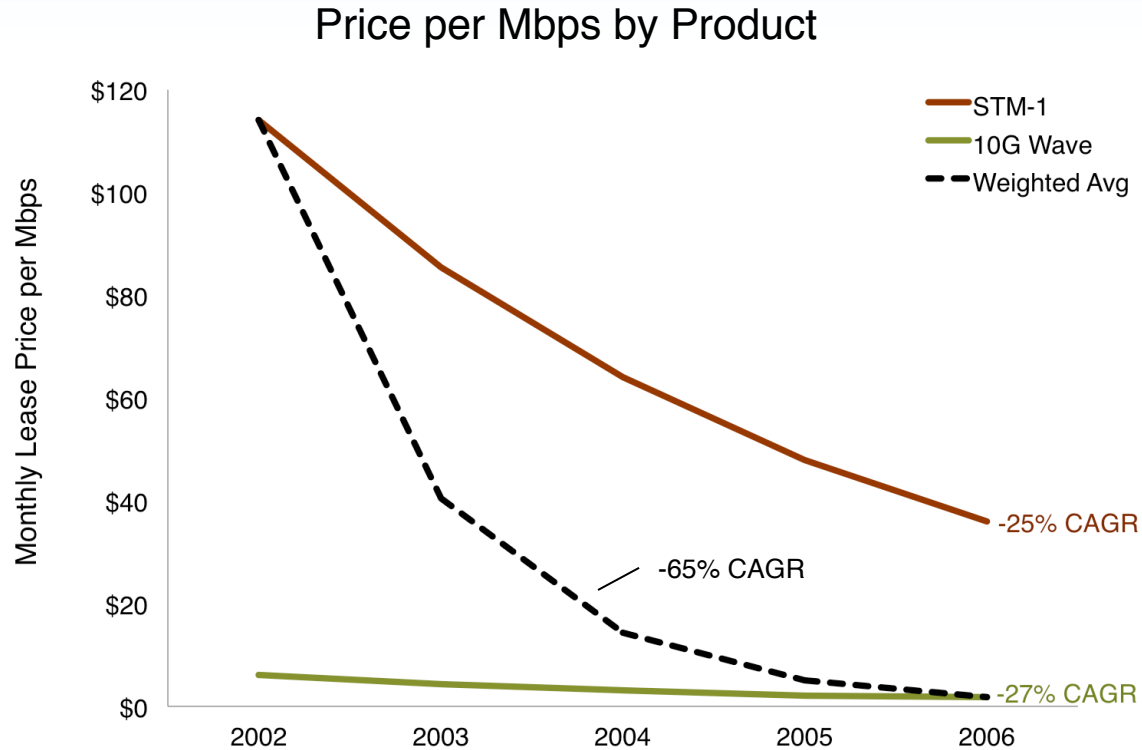
5-Year Forecast vs. Actual 2006 Price per Mbps



# Effect of shifting buying preferences

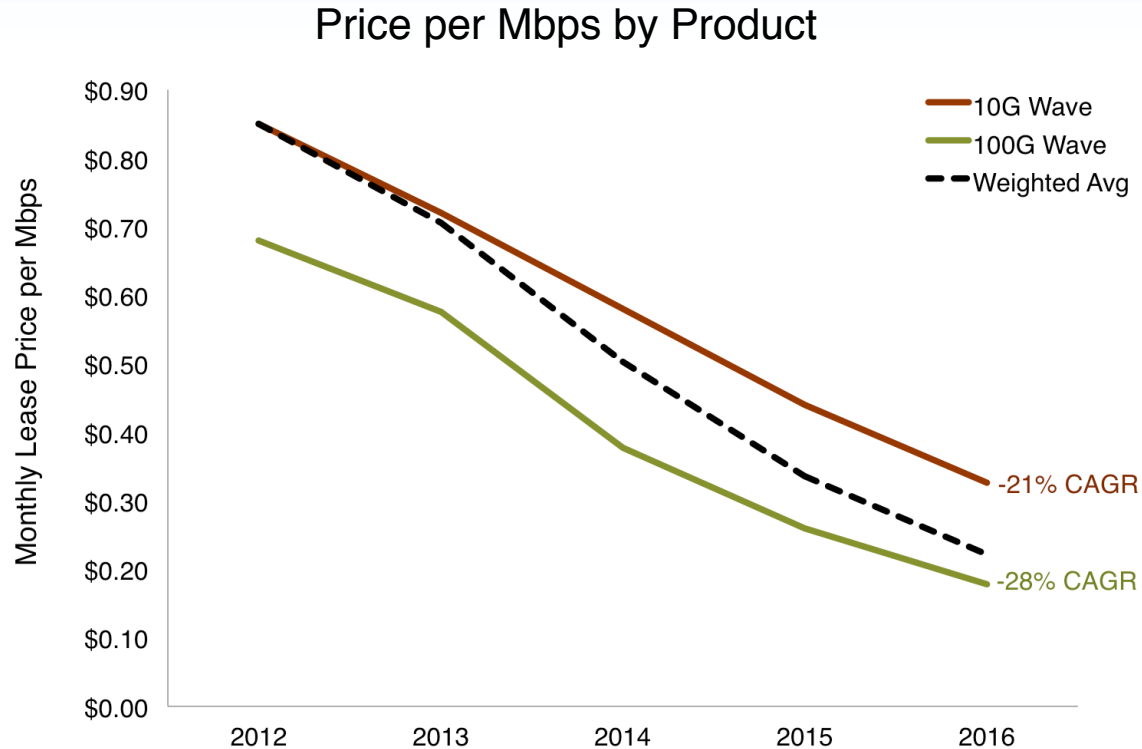


# Effect of shifting buying preferences





# Effect of shifting buying preferences

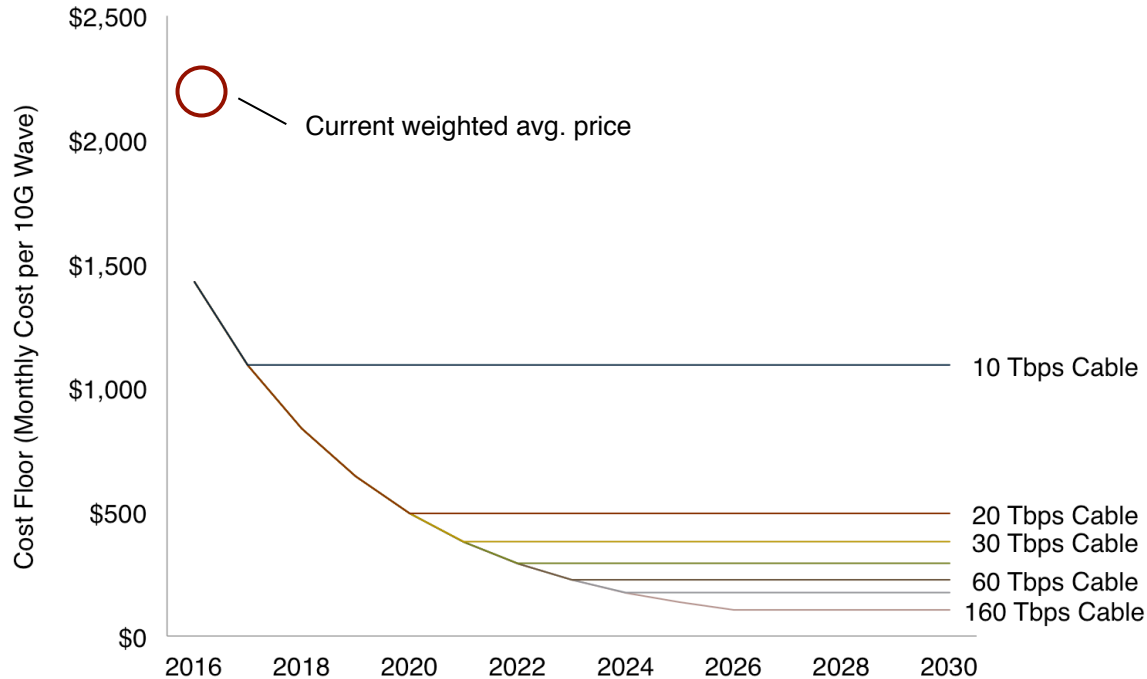


# Let's build a simple cost model

- Each cable has \$6m annual opex
  - Wet and dry O&M, backhaul fees, power, SG&A
- Ignore initial capital payoff
- 100G upgrade = \$275k, falling 20% annually
- Each cable loaded with 6 Tbps in 2016
  - Annual demand growth of 35% until fully loaded
- This is hypothetical. Your mileage may vary.

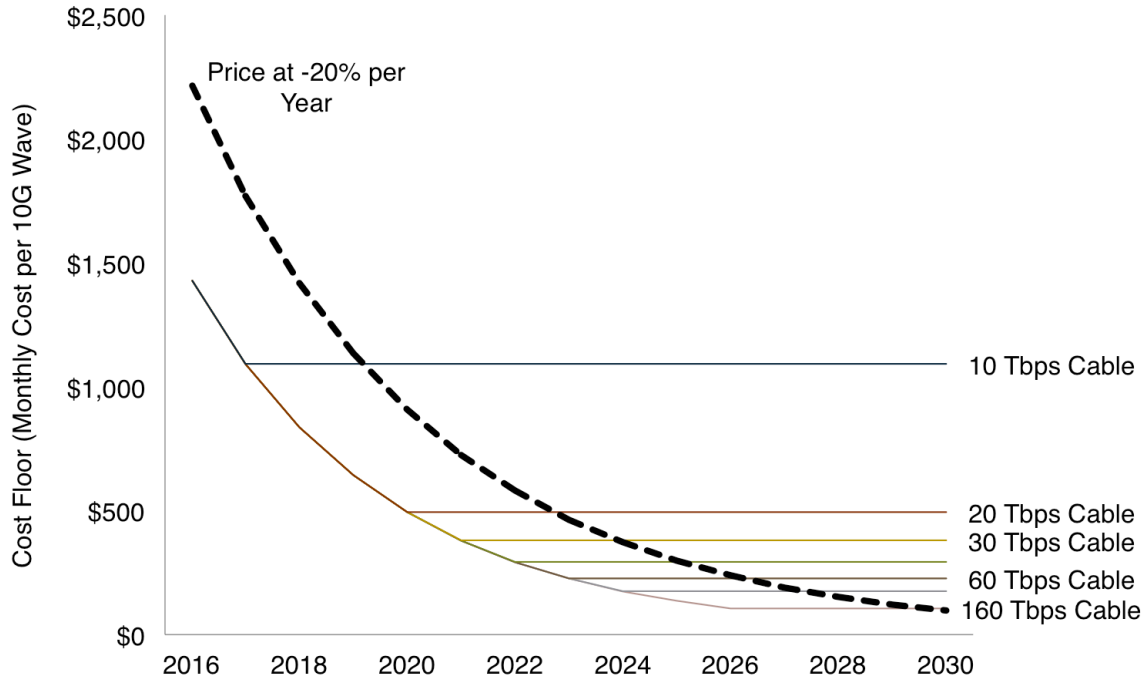
# Capacity drives cable unit costs

## Cost Floor per 10G Wave Sold



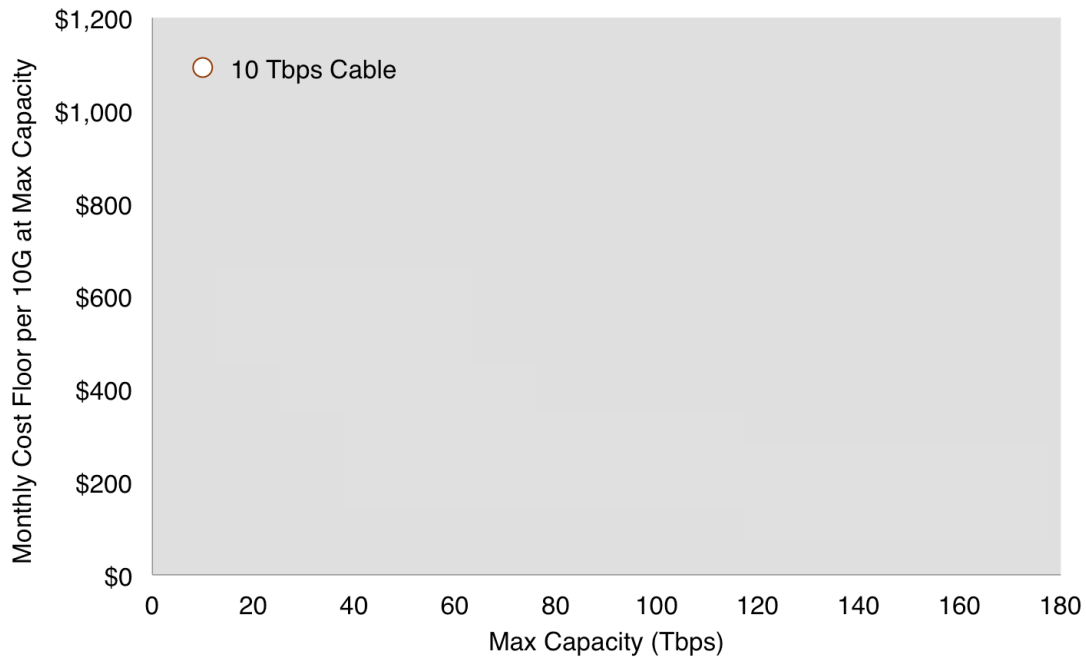
# Price finally approaches cost floor?

## Cost Floor per 10G Wave Sold



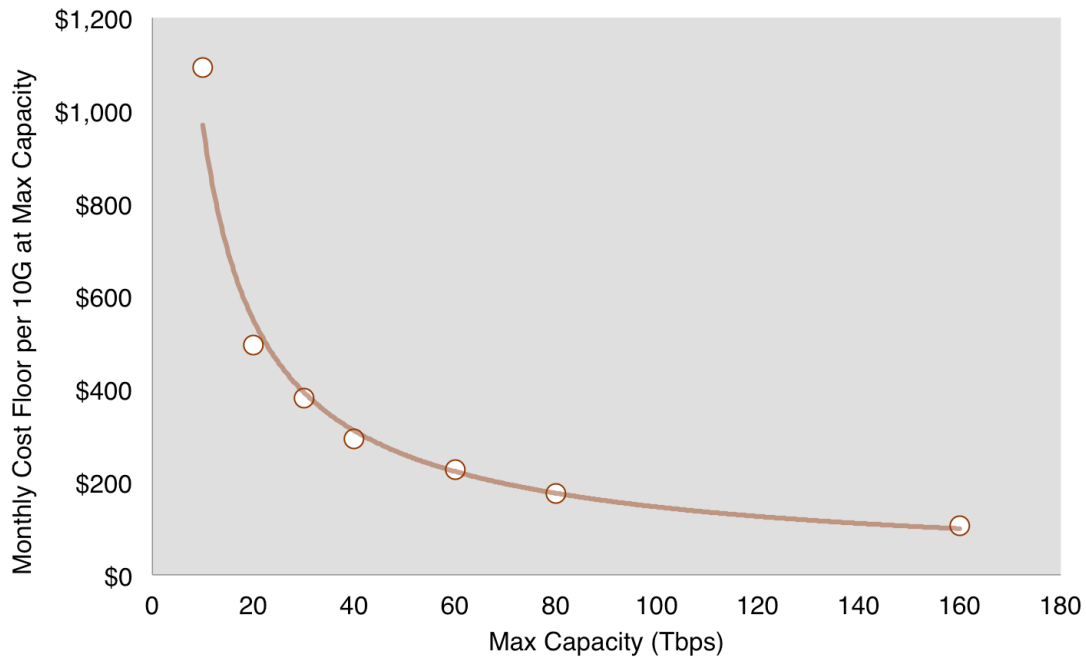
# There's a limit to economies of scale

## Cost Floor per 10G Wave Sold



# There's a limit to economies of scale

Cost Floor per 10G Wave Sold



# Big Scope for Price Decreases

Current worry: Sorta, but not really

# Headed for another burst?

- Uncertain future demand: YES
- Irrational exuberance: No
- Wholesale cable model: Not a major concern
- Huge up-front CAPEX: No
- Big scope for price decreases: No



# Other conclusions

- Bubble burst not in sight
- Wholesale market sellers
  - Please be careful
  - But they're no longer a systemic threat to the overall market
- Prices always will fall ... but there are cost constraints
- Some cables may become uneconomic soon