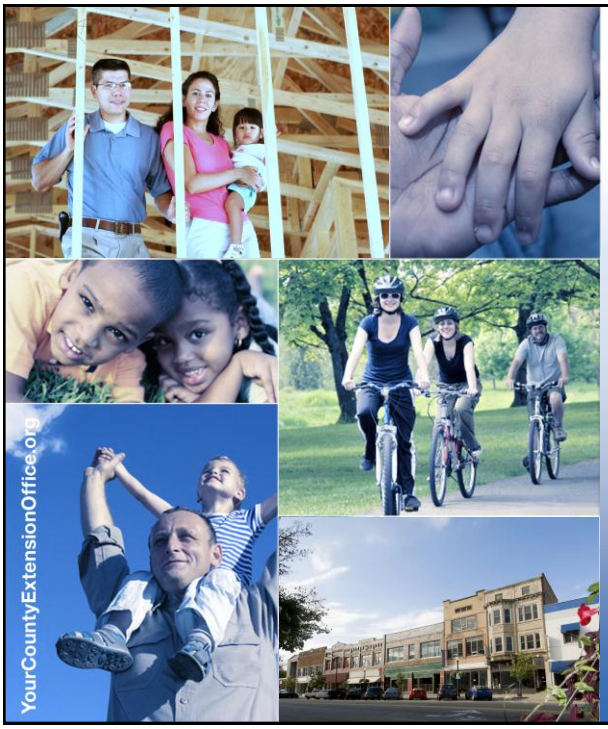

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Internet Access in Marathon County

Presentation to the Marathon County Board

October 10, 2013

internet access

- Internet access as a public policy issue
- Background on terms and key concepts
- Current state

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Where could we go?

- e-government
- For more instructional and case study videos, visit the Wisconsin Broadband Channel on YouTube - WIBroadband1

Available Services

- WIRED
  - Dial-up
  - Digital Subscriber Line (DSL)
  - Cable modem
  - Fiber optic, to home or business
- WIRELESS
  - Satellite
  - Cellular
  - Wi-Fi (Fixed Wireless)

Dial up

- Speed range: less than 56 Kbps
- Advantages
  - Uses existing, widely available land (phone) lines
- Challenges
  - SLOW!
  - So slow that most connections TIME OUT
  - Copper wiring is deteriorating and not being re-invested

DSL

- Speed range: 500 Kbps to 6 Mbps
- Advantages
  - Uses existing Land Lines BUT – must be within XX distance from phone company's electronics
  - Relatively affordable for residences
- Challenges
  - Speed depends on distance from central office;
  - no service at greater distances from CO
  - Shared Bandwidth with your neighbors

Cable modem

- Speed range: 5Mbps – 30 Mbps Download
  - 200 – 400 Kbps Kbps Upload
- Advantages
  - Uses cable TV infrastructure
  - Faster speeds
- Challenges
  - Usually available only where there is high population density
  - More people on the line = slower service

Fiber optic

- Speed range: 10Mbps,1 Gig, 100Gig, ?
- Advantages
  - Awesome Speed! Just buy faster optics
  - Consistent and reliable
- Challenges
  - Very expensive to bury or hang new fiber
  - Plowed 2" conduit $4/foot
  - Bored $14/foot
  - Bored Cobble $35/Cobble
  - Bored Rock $82/foot

Satellite

- Speed range: 6-15 Mbps Down/.5-3Mbps Up
- Advantages
  - Relatively universal availability
- Challenges
  - Latency (delay of signal)
  - Reliability – weather and sunspot activity
  - Requires clear path
  - Higher cost (relative)
  - VPN and VoIP often not available (often required for business applications)

Wireless

Cellular Residential

- Speed range: 400Kbps-700Kbps
- Advantages
  - More coverage in our county than DSL
- Challenges
  - Trees
  - Still have parts of county with no cell coverage

Wireless

Cellular Mobile (aircards and Mifi)

- Speed range: 3G 1Mbps/.25Mbps
- 4G
- Advantages
  - Flexible
- Challenges
  - Speeds go up and down radically as you move around AND as other usage peaks
  - Geographic coverage

Wireless

Wi-Fi

- Speed range: 1Mbps-4Mbps
- Advantages
  - Available in some rural areas without cell or DSL
- Challenges
  - Blocked by terrain or trees
  - Rapid signal deterioration; requires more repeaters
  - Capacity is often oversubscribed
  - Might not be there for you when you need it

Wireless

Speed Examples

- 7 Mg board packet from May 2013
- 3G Mifi – 3 Minutes
- Good DSL – 16 seconds
- Satellite – 17s
- Cable – 11s
- Fiber – <3s

Other Examples

- Note –Movie varies from 3Gig-26Gig.
- It could take 18-40 Hours to download on a lower speed connection
- I took 339 pictures on vacation. On Mifi, would take 10 hours to upload

Coverage Maps

- Wired http://www.co.marathon.wi.us/Portals/0/Departments/CCD/Documents/BGA_Appendix-G_WiredBroadbandCoverage.pdf
- Cellcom http://www.cellcom.com/coverage_map.html
- Forested http://www.co.marathon.wi.us/Portals/0/Departments/CCD/Documents/BGA_Appendix-L_ForestedAreasMarathonCounty.pdf
- Wifi http://www.co.marathon.wi.us/Portals/0/Departments/CCD/Documents/BGA_Appendix-H_ClaimedWirelessBroadbandCoverage.pdf
- For more maps, see the broadband gap analysis report http://www.co.marathon.wi.us/Departments/InformationTechnology/BroadbandGapAnalysis.aspx

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Current State

- Rural Areas still have gaps – Cellcom map
- Rural areas with coverage often find it too slow or not reliable enough to telecommute
- Not many free hotspots

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broadband access as a public policy issue

- Educate yourself and your colleagues
- Inform decision makers and residents, dispel misinformation
- Inform public policy with legislators, Public Service Commission
- Support outreach activities

- Know your providers, develop relationship
- Conduct demand surveys
- Host technology fairs, tech advisory committees
- Cultivate public/private partnerships

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broadband access as a public policy issue (2)

- Develop policy on access to public infrastructure, such as towers, access in public places
- Promote “Dig Once” policies
- Coordinate public works projects
- Foster CANs, cooperatives (e.g. “pole funding”)
- Set a minimum speed and reliability goal
- Tie economic development priorities to improved access, telecommuting

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