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The Cooperative Business Structure as a Mechanism for Rural Broadband Expansion: A Case Study from Northern New York

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- **Technical information and cost parameters**: **Slic Network Solutions**, Nicholville, NY (subsidiary of employee-owned Nicholville Telephone Company
- **Cooperative Feasibility Template**: **Phil Kenkel and Rodney Holcomb**, Oklahoma State University

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BACKGROUND

- **Internet providers less likely to offer high-speed service to lesser-populated areas as ROI are insufficient**
  - NRECA: Of 897 electric co-ops members ~80 are actively pursuing BB, double what is was two years ago (Warren 2017)
  - NTCA: 850+ small, independent, rural telecoms (260 co-ops) are ALL providing broadband; 58% in 2000 (Wismer 2017). Speed/Type?
- **Federal/State legislation to support development & expansion**
  - Are RBB Co-ops the ***new*** New Deal?
  - Some states prohibit RECs to provide RBB (Mayberry 2017), changing
  - Grant and loan opportunities; some w/min speed at max price offerings
- **Much anecdotal, fewer rigorous analyses.**
  - RBB supported $100B+ in e-commerce in 2015 (Hudson Institute 2016)
  - Financially feasible to support long-term rural development?

OUR APPROACH

- **Collaborate with existing service provider to:**
  - Design system, capacity, bandwidth for study area(s), 100 mbps
  - Recommend cost parameters (investment, O&M, tech/cust service, etc.)
- **Utilize Census data to:**
  - Estimate distribution of HHLD income: low vs. high speed demand
  - Classify residential housing by type: year-round vs seasonal subscribers
- **Adapt OSU Cooperative Feasibility Template to:**
  - Incorporate Grant/Loan/Member Equity Investment, 85/10/10
  - Incorporate Subscriber penetration, price, and growth scenarios
  - Assess NEW RBB co-op feasibility at existing market and cash flow prices with and without grant restrictions (min Speed/max price)
  - Assess EXISTING co-op RBB expansion feasibility over same scenarios
- **Narrow geographical focus** (4 towns in Franklin County)**, broader implications** (similar population densities)

STUDY AREA

- **Selected Towns in Franklin County, NY**
  - Fort Covington and Westville (north),
  - Duane and Franklin (central),
  - Harrietstown, excluding Village of Saranac Lake (south)
  - All areas except Fort Covington & Westville inside Adirondack Park
- **Variation in amount of public land, farm land, slope, forest cover, camping, seasonal residency, population density…**
  - Population per square mile: H 9.3, F 6.7, D 2.3, FCW 48.8
  - Median household income ($000): H 95.0, F 55.6, D 56.8, FCW 42.3
  - Potential subscribers per mile: H 0.9, F 4.9, D 7.0, FCW 9.8
  - Total potential subscribers = 1,604, total miles construction = 256

FINANCIAL SCENARIOS

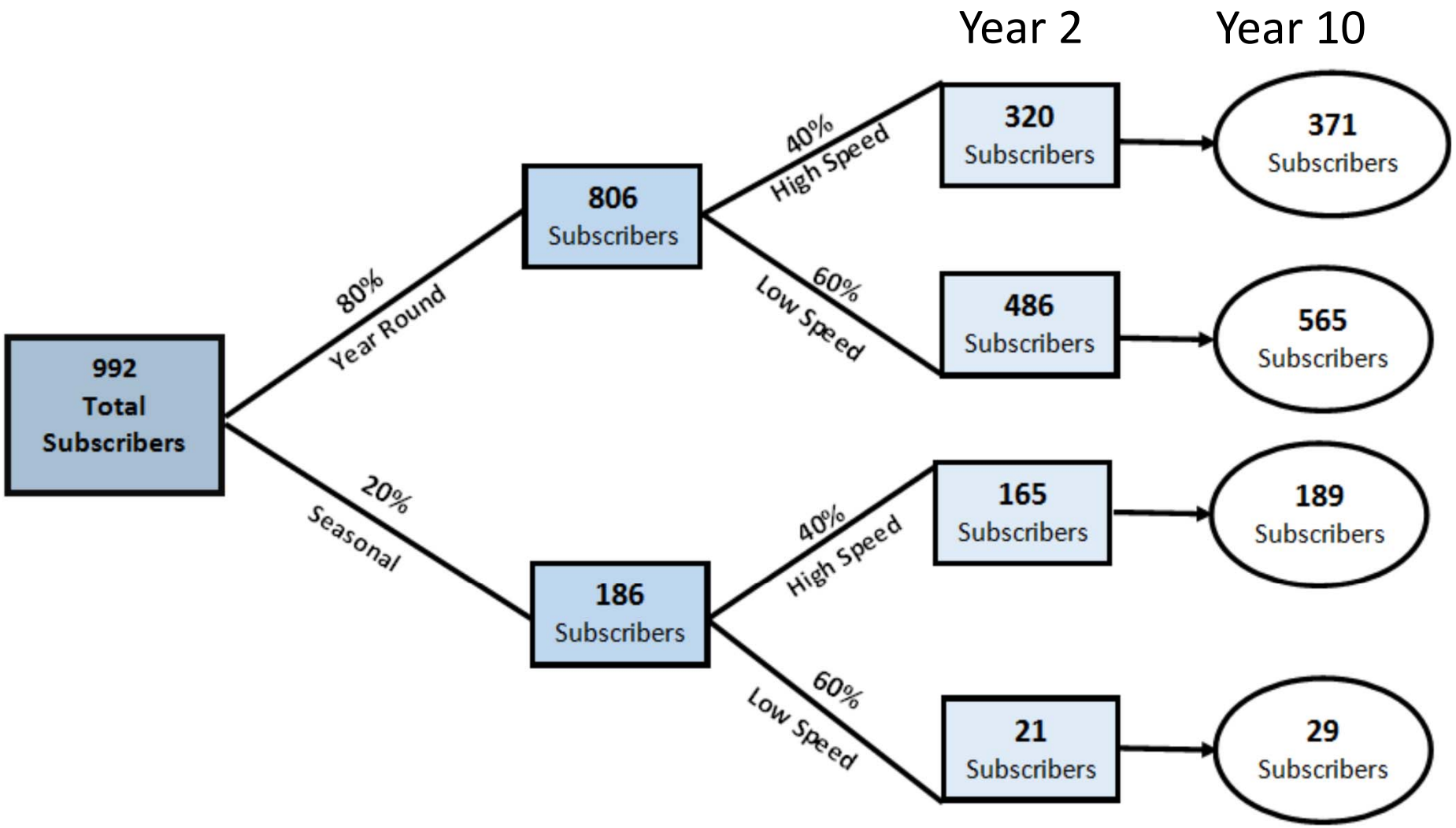
- **SERVICE PRICES:**
  1. **MP: market prices (nearby/adjacent to study area)**
     - High speed: $100/month, Low speed: $60/month
  2. **CFP: cash flow prices**
     - Both prices increase proportionally until cash flows
     - Low speed fixed, high speed price increases until cash flows
- **COOPERATIVE TYPE:**
  1. **New stand alone RBB cooperative**
  2. **Existing cooperative expands to offer RBB service**
     - Set to zero: personnel expenses for cooperative management and staff, utilities for co-op offices, co-op organizational expenses, pole rental.

Construction assumes 80% grant (New NY Broadband Program), 10% loan, & 10% upfront member investment ($836, indifferent across members)

Table 7. Potential member subscribers and infrastructure requirements, by region.

	Towns				
Descriptor	FCW	D	F	H	Total
Potential subscribers	1,086	146	315	57	1,604
% Penetration	65%	50%	50%	100%	62%
Total subscribers (year 1)	705	73	157	57	992
% homes seasonal	20%	20%	20%	0%	19%
Subscribers – year-round	564	59	126	57	806
Subscribers – seasonal (6 mos.)	141	14	31	0	186
% year-round high speed	40%	40%	40%	40%	40%
% seasonal high speed users	90%	90%	90%	90%	90%
Subs Year High Speed	225	23	50	22	320
Subs Seasonal High Speed	126	12	27	0	165
Subs Year Low Speed	339	36	76	35	486
Subs Seasonal Low Speed	15	2	4	0	21
Miles of constr – Backbone	11.80	4.40	16.50	45.40	78.10
Miles of constr - Distribution	99.45	16.50	47.40	15.00	178.35
Miles of construction - Total	111.25	20.90	63.90	60.40	256.45
Subs density, max/mile	9.76	6.99	4.93	0.94	6.26
Subs density, actual/mile, Y1	6.34	3.49	2.46	0.94	3.87

SUBSCRIBERS BY TYPE (SEASONAL, SPEED)



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CO-OP TIMELINE

Year 0	Year 1	Year 2	Year 3 – 10
• Organize public meetings • Secure grant • Member equity drive • File legal papers to organize co-op • Establish initial BOD	• Complete equity drive • System construction • Hire co-op management & staff • Some expenses (ins)	• System fully functional • Initial member sales • Net surplus (if any) allocated to unallocated reserves (10), cash patronage refund (25), and qualified member stock (65)	• Annual subscriber growth = 2% • Annual monthly service fee growth = 1% • Expense inflation rate = 1.5% • Reinvestment in depreciable assets occurs • Net surplus allocated to unallocated reserves (10), cash patronage refund (25), qualified member stock (65). • Redeem equity when appropriate (5 year revolving period)

CONSTRUCTION COSTS

Fiber cost and installation - Backbone	$2,108,700
Fiber cost and installation - Distribution	$4,369,575
Cost of electronics	$241,297
Subscriber installations	$992,000
Total capital construction cost	$7,711,572
Supplemental expenses prior to and during construction	$578,637
Total project construction cost	$8,290,209
Grant Amount (80%)	$6,632,167
Loan Amount (10%)	$929,021
Member investment (10%)	$929,021

MODEL PARAMETERS

System construction	
System bandwidth capacity	1 gigabyte
Construction cost - backbone fiber, $/mile	$27,000 (useful life 20 years)
Construction cost - distribution fiber, $/mile	$24,500 (useful life 20 years)
Cost of per premise installation	$1,000 (useful life 7 years)
Revenue	
Annual subscriber growth	2%
Annual subscriber fee increase	1%
Expenses	
Billing and technical support (% of capital cost)	0.50%
Pole rental (% of capital cost)	2.98%
Maintenance (% of capital cost)	3.90%
Insurance (% of capital cost)	3.00%
Property taxes (% of capital cost)	2.66%
Annual expense inflation rate	1.50%

MODEL PARAMETERS

Expenses (continued)	
Co-op office facilities (lease & utilities), $/mo	$1,550
Cost of bandwidth (supply & delivery), $/mo	$3,000
Member outreach and supplies, $/year	$5,000
Misc expenses (travel, meetings), $/year	$10,000
Personnel	
General Manager (annual salary)	$65,000
Clerical/administrative Assistant (annual salary)	$40,000
Accountant, part time (annual cost, no benefits)	$20,000
Payroll	
Benefits = Payroll + Retirement + Empl Insur	35%
Annual wage inflation	2.5%
Loans	
Operating loan/working capital	$100,000, 8.0%
Term loan	5.0%, 10 years
Income tax rates, co-op / member	35%/25%
Upfront legal fees, permits, licenses (Year 0)	$50,000

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MODEL RESULTS

	MARKET PRICES		CASH FLOW PRICES			
			No grant restriction		Grant restriction	
	YEAR 2	YEAR 10	YEAR 2	YEAR 10	YEAR 2	YEAR 10
FINANCIAL METRIC	**NEW CO-OP**					
Prices, $/mo. (high/low)	**100/60**	**108/65**	**178/107**	**193/116**	**236/60**	**256/65**
Total Sales ($000)	840	1,057	1,497	1,882	1,498	1,880
Total Expenses ($000)	1,558	1,749	1,558	1,753	1,558	1,753
Cum. Cash Flow ($000)	(697)	(6,443)	(41)	-	(39)	-
	EXPAND CO-OP					
Prices, $/mo. (high/low)	**100/60**	**108/65**	**128/77**	**139/83**	**149/60**	**161/65**
Total Sales ($000)	840	1,057	1,076	1,353	1,077	1,353
Total Expenses ($000)	1,123	1,245	1,123	1,249	1,123	1,249
Cum. Cash Flow ($000)	(259)	(2,192)	(23)	-	(23)	-

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SENSITIVITY TO HIGH SPEED USERS (YEAR-ROUND)

	High Speed Year-round Users	
	40%	**80%**
NEW CO-OP		
Cash flow price – high speed	$236	$157
Cash flow price – low speed	$60	$60
Cash flow price – weighted average	$130	$138
EXPAND CO-OP		
Cash flow price – high speed	$149	$109
Cash flow price – low speed	$60	$60
Cash flow price – weighted average	$96	$99

[1] Prices are year 2 prices (before annual adjustment), rounded to the nearest dollar.

Summary

- **Community leaders indicate a need for high-speed BB and concern about long-term impact to the area without sufficient service (THINK TOURISM).**
- **Existing market prices shown to be highly infeasible for new co-ops (low population densities + limited/no scale economies in construction + high annual O&M)**
- **High speed prices need to increase 136% and 49% for new and expanded co-op enterprises, respectively, to cash flow.**
- **WTP a combination of need for high-speed service and acceptance of high-speed (income) users in subsidizing low-speed (income) users.**
- **Results sensitive to the for high versus low speed services. Doubling high speed users reduces cash flow price increases to 57% an 9%, lending some evidence to higher likelihood of success for current rural utility cooperatives to expand.**
- **Giving grants to build the system does NOT solve the issue for rural areas. Review of cost parameters important for further study.**

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Thank You!

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Questions?

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