AGENDA

QLife Regular Board Meeting

Thursday, January 26th, 2017
Noon
Wasco County Courthouse
Deschutes Room – BO8

1. Approval of Agenda
2. Introduction of New Board Member: Darcy Long Curtis
3. Approval of November 22, 2016 Board Minutes
4. Financial Reports – Kate Mast
5. Reports – John Amery
6. Maupin Project Update including Cost Overruns- Erik Orton and Dan McNeely
7. Amendment No. 2 to Commstructure QLife Agreement
8. Consultant Interviews including Scope of Work

   Adam Haas Interview @ 12:30 pm

   Nancy Jesuale Interview @ 1:00 pm

   Joanne Hovis Interview @ 1:30 pm

   Joeseph Franell @ 2:00 om
9. Executive Session: (2)(g) Competitive trade or commerce negotiations and (2)(m)(E) Discuss information regarding security of telecom systems and data transmission.
10. Old/New Business

    Bond Continuation Certificate

    Dan Spatz – Letter of Resignation

    Scholarship Donations
11. Next Meeting Dates: Regular Board Meeting – to be deteremined
12. Adjourn

**Agenda subject to change*

An executive session may, in the discretion of the presiding officer, be called based on one or more of the following: ORS 192.660 (2)(a) Consider employment issues; (2)(e) Real property' (2)(f) Consider exempt records or information; (2)(g) Competitive trade or commerce negotiations; (2)(h) Consult with counsel re litigation; (2)(m)(D) & (E) Discuss information regarding security of telecom systems and data transmission.

Introduction to New Board Member:
Darcy Long-Curtiss

- No materials submitted – return to agenda

Approval of November 22, 2016 Minutes

- November 22, 2016 Minutes

Financial Reports

- Monthly Financial Statements
- Quarterly Financial Statements
- Monthly Transactions

TO: Qlife Board
Tyler Stone, QLife Administrator

FR: Kate Mast, Finance Director

RE: Financial Report for QLIFE – **December 2016**

BANKING:

QLife monies are deposited into a separate bank checking account. QLife also has a Local Government Investment Pool (LGIP) account where excess funds are maintained in order to earn some interest.

The information below is a comparison of budget to actual revenues and expenditures for the month just ended by fund. This information is not audited, but is reviewed by the Finance Department for clarity and budget compliance.

50% of the year has passed. Total Cash available is $1,165,443.04

Each fund exceptions narrative has four possible paragraphs; 1 - is the beginning balance, 2 - is new revenues, 3 - is expenditures and 4 - if present, is budget changes.

OPERATIONS (600):

BUDGET COMPARISONS

	July 1, 2015 to December 31, 2016			
	Budget	**Actual**	**Percentage**	
Beginning Balance	$ 152,496	$ 157,296	103.1%	* see below
Revenues	$ 731,180	$ 334,150	45.7%	
Expenditures	$ 450,185	$ 108.302	24.1%	
Transfers to Capital/Debt Fund	$ 433,491	$ 236,450	54.5%	
Revenues Less Expenses	$ 0	$ 146,694		

Cash at Month End $ 44,741.74

Exceptions:

1) Beginning Balance: * *The Beginning Balance figures used here have been audited.* The Beginning Balance is $4,800 more than budgeted.
2) Revenues:
   a) At 50% of the year, we have received 48.8% of the budgeted charges for services revenue.
3) Expenditures:
   a) Engineering Services line item has been over-expended by $9,801.80. I recommend a review of the coding of some of these invoices, as the ones done for customers may need to be reclassified to the QLife Capital 601 fund.
   b) Office Supplies has been over-expended by $27.58.
4) Budget Changes: No budget changes have been made to this fund this fiscal year.

CAPITAL (601):

BUDGET COMPARISONS

July 1, 2015 to December 31, 2016

	Budget	Actual	Percentage	
Beginning Balance	$ 861,965	$ 870,111	100.1%	* see below
Transfers In	$ 433,491	$ 236,450	54.5%	
Revenues	$ 30,000	$ 625	2.1%	
M&S / Capital Outlay / Other	$ 1,325,456	$ 4,208	0.0%	
Debt Expenditures	$ 00	$ 0	0.0%	
Revenues Less Expenses	$ 0	$ 1,102,978		

Cash at Month End $ 1,102,999.82

Exceptions:

1) Beginning Balance: * *The Beginning Balance figures used here have been audited.* Beginning Balance is $8,145.84 more than budgeted.
2) Revenues: .
3) Expenditures:
4) Budget Changes: No budget changes have been made to this fund this fiscal year.

MAUPIN (602):

BUDGET COMPARISONS

July 1, 2015 to December 31, 2016

	Budget	Actual	Percentage	
Beginning Balance	$ 199,135	$ 13,620	6.8%	* see below
Revenues	$ 255,345	$ 45,688	0.0%	
Expenditures	$ 454,480	$ 41,607	9.2%	
Revenues Less Expenses	$ 0	$ 17,701.48		

Cash at Month End $ 17,701.48

Exceptions:

1) Beginning Balance: * *The Beginning Balance figures used here have been audited.* The Beginning Balance is $165,515.07 less than budgeted. This was due to grant funds not being received as anticipated in FY15/16.
2) Revenues: Three (3) drawdowns have been submitted and approved for the Maupin Grant. Maupin received the drawdowns and has repaid QLife in the amount of $45,662.00.
3) Expenditures: The Legal Services line item has been over-expended by $1,845.00.
4) Budget Changes: No budget changes have been made to this fund this fiscal year.

Report Criteria:
All Accounts
Summarize Payroll Detail
Print Period Totals
Print Grand Totals
Include Funds: 600
Page and Total by Fund
Include Balance Sheets: None
Include Sources: 344-399
Include Depts: None
All Segments Tested for Total Breaks

4th Quarter - 2016

Date	Journal	Reference Number	Payee or Description	Account Number	Budget Amount	Encumbrance Amount	Actual Amount	Budget Balance
UTILITY SERVICE CHARGES			09/30/2016 (09/16) Balance	600-0000-344.10-00				509,230.00-
10/31/2016	AR	14 Billings			.00	.00	55,135.00-	
			10/31/2016 (10/16) Period Totals and Balance		.00 *	.00 *	55,135.00- *	454,095.00-
11/30/2016	AR	12 Billings			.00	.00	53,785.00-	
			11/30/2016 (11/16) Period Totals and Balance		.00 *	.00 *	53,785.00- *	400,310.00-
12/31/2016	AR	12 Billings			.00	.00	53,785.00-	
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	53,785.00- *	346,525.00-
LSN CEDITS			09/30/2016 (09/16) Balance	600-0000-344.15-00				.00
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00
CONNECT CHARGES			09/30/2016 (09/16) Balance	600-0000-344.20-00				1,000.00-
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	1,000.00-
INTEREST REVENUES			09/30/2016 (09/16) Balance	600-0000-361.00-00				1,984.91-
10/31/2016	CRJE	16 Record Int Earned			.00	.00	860.10-	
			10/31/2016 (10/16) Period Totals and Balance		.00 *	.00 *	860.10- *	1,124.81-
11/30/2016	CRJE	11 Record bank int/fees			.00	.00	892.17-	
			11/30/2016 (11/16) Period Totals and Balance		.00 *	.00 *	892.17- *	232.64-
12/31/2016	CRJE	5 Bank Interest			.00	.00	927.05-	
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	927.05- *	694.41
OTHER MISC REVENUES			09/30/2016 (09/16) Balance	600-0000-369.00-00				200.00-
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	200.00-
E-RATE REIMBURSEMENT			09/30/2016 (09/16) Balance	600-0000-369.20-00				50,000.00-
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	50,000.00-
SALE OF FIXED ASSETS			09/30/2016 (09/16) Balance	600-0000-392.00-00				.00
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00
Number of Transactions: 6 Number of Accounts: 7								
Total QUALITYLIFE AGENCY FUND:					.00	.00	165,384.32-	165,384.32-
Number of Transactions: 6 Number of Accounts: 7								
Grand Totals:					.00	.00	165,384.32-	165,384.32-

Report Criteria:
All Accounts
Summarize Payroll Detail
Print Period Totals
Print Grand Totals
Include Funds: 600
Page and Total by Fund
Include Balance Sheets: None
Include Sources: 344-399
Include Depts: None
All Segments Tested for Total Breaks

CALENDAR YEAR - 2016

Date	Journal	Reference Number	Payee or Description	Account Number	Budget Amount	Encumbrance Amount	Actual Amount	Budget Balance
UTILITY SERVICE CHARGES			12/31/2015 (12/15) Balance	600-0000-344.10-00				326,954.00-
01/27/2016	TB	1048	MISC RECEIVABLES MR		.00	.00	54,390.00-	
			01/31/2016 (01/16) Period Totals and Balance		.00 *	.00 *	54,390.00- *	272,564.00-
02/22/2016	TB	1181	MISC RECEIVABLES MR		.00	.00	54,390.00-	
			02/29/2016 (02/16) Period Totals and Balance		.00 *	.00 *	54,390.00- *	218,174.00-
03/21/2016	TB	1329	MISC RECEIVABLES MR		.00	.00	54,390.00-	
			03/31/2016 (03/16) Period Totals and Balance		.00 *	.00 *	54,390.00- *	163,784.00-
04/20/2016	TB	1485	MISC RECEIVABLES MR		.00	.00	54,840.00-	
			04/30/2016 (04/16) Period Totals and Balance		.00 *	.00 *	54,840.00- *	108,944.00-
05/20/2016	TB	1647	MISC RECEIVABLES MR		.00	.00	54,840.00-	
			05/31/2016 (05/16) Period Totals and Balance		.00 *	.00 *	54,840.00- *	54,104.00-
06/30/2016	AR	23	Billings		.00	.00	112,292.51-	
06/30/2016	CR	5000358	SINGLE FIBER OPTIC - GORGE		.00	.00	55.00-	
			06/30/2016 (06/16) Period Totals and Balance		.00 *	.00 *	112,347.51- *	58,243.51
06/04/2016	JE	249	Reconcile QLife @ 06/30/16		.00	.00	.04	
09/26/2016	TB	1004	Correct Year End Balances		.00	.00	57,452.47	
			06/30/2016 (13/16) Period Totals and Balance		.00 *	.00 *	57,452.51 *	791.00
06/21/2016	BUD1	36	1617 ADOPTED BUDGET		676,380.00-	.00	.00	
			07/01/2016 (00/16) Period Totals and Balance		676,380.00- *	.00 *	.00 *	676,380.00-
07/31/2016	AR	12	Billings		.00	.00	55,770.00-	
07/31/2016	AR	14	Credit Memos		.00	.00	30.00	
			07/31/2016 (07/16) Period Totals and Balance		.00 *	.00 *	55,740.00- *	620,640.00-
08/31/2016	AR	6	Billings		.00	.00	55,105.00-	
			08/31/2016 (08/16) Period Totals and Balance		.00 *	.00 *	55,105.00- *	565,535.00-
09/30/2016	AR	14	Billings		.00	.00	56,305.00-	
			09/30/2016 (09/16) Period Totals and Balance		.00 *	.00 *	56,305.00- *	509,230.00-
10/31/2016	AR	14	Billings		.00	.00	55,135.00-	
			10/31/2016 (10/16) Period Totals and Balance		.00 *	.00 *	55,135.00- *	454,095.00-
11/30/2016	AR	12	Billings		.00	.00	53,785.00-	
			11/30/2016 (11/16) Period Totals and Balance		.00 *	.00 *	53,785.00- *	400,310.00-
12/31/2016	AR	12	Billings		.00	.00	53,785.00-	
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	53,785.00- *	346,525.00-
LSN CEDITS			12/31/2015 (12/15) Balance	600-0000-344.15-00				.00
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00
CONNECT CHARGES			12/31/2015 (12/15) Balance	600-0000-344.20-00				850.00
01/27/2016	TB	1048	MISC RECEIVABLES MR		.00	.00	900.00-	
			01/31/2016 (01/16) Period Totals and Balance		.00 *	.00 *	900.00- *	1,750.00
04/20/2016	TB	1485	MISC RECEIVABLES MR		.00	.00	200.00-	
			04/30/2016 (04/16) Period Totals and Balance		.00 *	.00 *	200.00- *	1,950.00
06/21/2016	BUD1	37	1617 ADOPTED BUDGET		1,000.00-	.00	.00	
			07/01/2016 (00/16) Period Totals and Balance		1,000.00- *	.00 *	.00 *	1,000.00-
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00

Date	Journal	Reference Number	Payee or Description	Account Number	Budget Amount	Encumbrance Amount	Actual Amount	Budget Balance
INTEREST REVENUES			12/31/2015 (12/15) Balance	600-0000-361.00-00				1,003.76
01/31/2016	TB	1086	REC BANK INT/FEES AJ 1086		.00	.00	412.68-	
			01/31/2016 (01/16) Period Totals and Balance		.00 *	.00 *	412.68- *	1,416.44
02/29/2016	TB	1237	REC BANK INT/FEES AJ 1237		.00	.00	447.10-	
			02/29/2016 (02/16) Period Totals and Balance		.00 *	.00 *	447.10- *	1,863.54
03/31/2016	TB	1398	REC BANK INT/FEES AJ 1398		.00	.00	541.71-	
			03/31/2016 (03/16) Period Totals and Balance		.00 *	.00 *	541.71- *	2,405.25
04/29/2016	TB	1553	REC BANK INT/FEES AJ 1553		.00	.00	543.35-	
			04/30/2016 (04/16) Period Totals and Balance		.00 *	.00 *	543.35- *	2,948.60
05/31/2016	TB	1708	REC BANK INT/FEES AJ 1708		.00	.00	613.83-	
			05/31/2016 (05/16) Period Totals and Balance		.00 *	.00 *	613.83- *	3,562.43
06/30/2016	CRJE	326	Record Bank int/fees		.00	.00	687.08-	
			06/30/2016 (06/16) Period Totals and Balance		.00 *	.00 *	687.08- *	4,249.51
06/21/2016	BUD1	38	1617 ADOPTED BUDGET		3,600.00-	.00	.00	
			07/01/2016 (00/16) Period Totals and Balance		3,600.00- *	.00 *	.00 *	3,600.00-
07/31/2016	CRJE	76	LGIP Interest for July 2016		.00	.00	90.31-	
			07/31/2016 (07/16) Period Totals and Balance		.00 *	.00 *	90.31- *	3,509.69-
08/31/2016	CRJE	121	Record interest income		.00	.00	767.07-	
			08/31/2016 (08/16) Period Totals and Balance		.00 *	.00 *	767.07- *	2,742.62-
09/30/2016	CRJE	33	Record bank int/fees		.00	.00	757.71-	
			09/30/2016 (09/16) Period Totals and Balance		.00 *	.00 *	757.71- *	1,984.91-
10/31/2016	CRJE	16	Record Int Earned		.00	.00	860.10-	
			10/31/2016 (10/16) Period Totals and Balance		.00 *	.00 *	860.10- *	1,124.81-
11/30/2016	CRJE	11	Record bank int/fees		.00	.00	892.17-	
			11/30/2016 (11/16) Period Totals and Balance		.00 *	.00 *	892.17- *	232.64-
12/31/2016	CRJE	5	Bank Interest		.00	.00	927.05-	
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	927.05- *	694.41
OTHER MISC REVENUES			12/31/2015 (12/15) Balance	600-0000-369.00-00				756.67
02/24/2016	TB	1190	QLIFE LONGEVITY CREDIT MIS		.00	.00	108.00-	
02/26/2016	TB	1207	MISC RECEIVABLES MR		.00	.00	2,867.83-	
02/24/2016	TB	1247	RVRS FOR BANK CODE MISC		.00	.00	108.00	
02/24/2016	TB	1250	CPY TO CORRECT BANKCODE		.00	.00	108.00-	
			02/29/2016 (02/16) Period Totals and Balance		.00 *	.00 *	2,975.83- *	3,732.50
06/21/2016	BUD1	39	1617 ADOPTED BUDGET		200.00-	.00	.00	
			07/01/2016 (00/16) Period Totals and Balance		200.00- *	.00 *	.00 *	200.00-
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00
E-RATE REIMBURSEMENT			12/31/2015 (12/15) Balance	600-0000-369.20-00				38,624.00-
02/16/2016	TB	1159	QLIFE ERATE ERATE 02/16/1		.00	.00	29,913.60-	
02/16/2016	TB	1248	RVRS FOR BANKCODE ERATE		.00	.00	29,913.60	
02/16/2016	TB	1249	CPY TO CORRECT BANKCODE		.00	.00	29,913.60-	
			02/29/2016 (02/16) Period Totals and Balance		.00 *	.00 *	29,913.60- *	8,710.40-
06/21/2016	BUD1	40	1617 ADOPTED BUDGET		50,000.00-	.00	.00	
			07/01/2016 (00/16) Period Totals and Balance		50,000.00- *	.00 *	.00 *	50,000.00-
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00
SALE OF FIXED ASSETS			12/31/2015 (12/15) Balance	600-0000-392.00-00				.00
			12/31/2016 (12/16) Period Totals and Balance		.00 *	.00 *	.00 *	.00
Number of Transactions: 42 Number of Accounts: 7								
Total QUALITYLIFE AGENCY FUND:					731,180.00-	.00	699,129.59-	1,430,309.59-
Number of Transactions: 42 Number of Accounts: 7								
Grand Totals:					731,180.00-	.00	699,129.59-	1,430,309.59-

Date	Journal	Reference Number	Payee or Description	Account Number	Budget Amount	Encumbrance Amount	Actual Amount	Budget Balance

Report Criteria:
- All Accounts
- Summarize Payroll Detail
- Print Period Totals
- Print Grand Totals
- Include Funds: 600
- Page and Total by Fund
- Include Balance Sheets: None
- Include Sources: 344-399
- Include Depts: None
- All Segments Tested for Total Breaks

QLIFE MONTHLY TRANSACTIONS

REVENUE BILLED LAST MONTH:

FUND:	**OPERATING 600**
FISCAL YEAR:	2016-17
PERIOD DETAIL:	January

CODE	PAYEE	DESCRIPTION		TOTAL
600.6000.000.34.30	Aristo Networks	October Retainer		$2,000.00
600.6000.000.34.30	Aristo Networks	November Retainer		$2,000.00
600.6000.000.34.30	Aristo Networks	December Retainer		$2,000.00
600.6000.000.32.10	Merina & Company	Audit		$4,450.00
600.6000.000.41.40	NW PUD	electricty		$51.20
600.6000.000.34.10	Commstructure	On call tech support		$1,678.75
600.6000.000.34.10	Commstructure	MCF&R		$303.75
600.6000.000.34.10	Commstructure	NJUNS		$427.50
600.6000.000.34.10	Commstructure	OSP Insight		$862.50
600.6000.000.34.10	Commstructure	Misc Conflict Review		$541.25
600.6000.000.34.30	Aristo Networks	LSN SO #28		$1,612.70
600.6000.000.34.30	Aristo Networks	November Oversight		$2,434.32
600.6000.000.58.10	Wasco County	Meeting Meal		$53.46
600.6000.000.52.30	NWPUD	electricty		$47.28
		TOTAL:		**$18,462.71**

FUND:	**CAPITAL FUND 601**
FISCAL YEAR:	2016-17
PERIOD DETAIL:	January

CODE	PAYEE	DESCRIPTION		TOTAL
601.6000.000.76.10	FedEx	Fiber Shipment		$631.47
601.6000.000.34.10	Commstructure	BPA Reconfiguration		$92.50
601.6000.000.76.10	Aristo Networks	BPA Fiber Switchout		$3,917.95
601.6000.000.76.10	Aristo Networks	Google PO		$237.36
601.6000.000.76.10	Aristo Networks	Fiber reimbursement		$3,125.86

			TOTAL:	**$8,005.14**

FUND:	**MAUPIN FUND 602**
FISCAL YEAR:	2016-17
PERIOD DETAIL:	January

CODE	PAYEE	DESCRIPTION		TOTAL
602.6000.000.76.10	Commstructure	Maupin Expansion		$17,218.75
			TOTAL:	**$17,218.75**

Reports

- Technical Management Report – John Amery

Aristo Networks LLC
Technical Management Report
By
John Amery
1/19/2017

Items of Discussion:

- BPA fiber re-route project
  - The BPA re-route project is still open.
  - All long haul customers have been re-routed. BPA has transitioned over to the new path and has deconstructed the old path out of The Dalles.
  - Cleanup along with some local customer re-routing is still required before project is completed.
- . Qlife electronics monitoring
  - Aristo Networks has been working to improve Qlife's visibility via network monitoring. This includes customizing of monitors to match Qlife's specific equipment.

Maupin Project Update and Cost Overruns

- No documents submitted – return to agenda

Amendment No. 2 to Commstructure QLife Agreement

- Amendment No. 2
- Original Professional Services Agreement
- Amendment No. 1

AMENDMENT NO. 2
TO AGREEMENT FOR PROFESSIONAL SERVICES

BETWEEN

Q-Life
313 Court Street
The Dalles, Oregon 97058

and

Commstructure Consulting, LLC
16348 Wittke Court
Oregon City, Oregon 97045

Date: January 3, 2017

The Terms and Provisions of the Agreement for Professional Services between Q-Life and Commstructure shall be amended as follows:

Exhibit A – The Standard Hourly Rates shall be amended with the 2016 / 2017 Rate Schedule

See attached Exhibits:

Exhibit A – Standard Hourly Rate Schedule – 2016 / 2017 Rate Schedule

Approved By:

Q-LIFE		**COMMSTRUCTURE CONSULTING, LLC**	
By:		**By:**	
Title:		**Title:**	President
Date:		**Date:**	January 3, 2017

EXHIBIT A – STANDARD HOURLY RATE SCHEDULE

Unit #	Unit Description	Basis	* Rate
CC109	Principal	Per Hour	$ 130.00
CC110	Project Manager	Per Hour	$ 115.00
CC111	Senior OSP Designer	Per Hour	$ 105.00
CC112	OSP Designer	Per Hour	$ 90.00
CC113	OSP Design Technician	Per Hour	$ 75.00
CC114	Senior CAD Technician	Per Hour	$ 85.00
CC115	CAD Technician	Per Hour	$ 80.00
CC116	Office / Project Coordinator	Per Hour	$ 80.00
CC117	Permit Coordinator	Per Hour	$ 80.00
CC118	Owner Representative / Construction Oversight	Per Hour	$ 90.00

* Rates are subject to an annual review and adjustment.

Travel Expense and Reimbursable Expenses

Standard Hourly Rates do not include provisions for travel expenses or other reimbursable direct expenses (i.e. express mail, permit fees, large format color plotting, specialized base mapping data for specific communities, reprographics, binding, etc.)

Travel expenses including travel time, meals, lodging and miscellaneous expenses will be reimbursed at actual cost or GSA published rates plus 10% for projects requiring travel beyond a 50 mile radius of the Commstructure home office. Travel compensation is negotiable based on project scope and locations.

All mileage incurred will be reimbursed per the current effective IRS reimbursement rate at the time of travel.

Reprographics, courier services and other reimbursable direct expenses shall be reimbursed at actual cost plus 10%.

Commstructure Consulting, LLC

PROFESSIONAL SERVICES AGREEMENT

Summary of Terms

A. CLIENT NAME:		**Quality Life Intergovernmental Agency (Q-Life)**
Address:		313 Court Street The Dalles, Oregon 97058
B. PROJECT NAME:		**On-Call Communications Consulting Services**
C. COMMSTRUCTURE:		
Office Address:		16348 Wittke Court Oregon City, Oregon 97045
Project Number:		
D. EXECUTION DATE: (date of latest signature by parties)		
E. TERM:		**Agreement expires 12/31/2007 unless extended by amendment**

F. COMPENSATION (check one): [See Section 2.1 of the Terms and Conditions for Description

☐ Lump Sum	Lump Sum Amount:	Varies – Work Order specific
☐ Negotiated Billing Rates	Total Compensation Amount:	
☐ Salary Multiplier:	Total Compensation Amount:	
☐ Other: (*Used for CPFF, OH & Fee Only*)	Total Compensation Amount:	

G. NOTICES:

If to Q-Life:		**If to Commstructure:**	
Address:	313 Court Street The Dalles, Oregon 97058	Address:	16348 Wittke Court Oregon City, Oregon 97045
Attention:	Dan Ericksen (name of designated Q-Life representative)	Attention:	Erik Orton (name of Commstructure signatory)
Phone:	541/296-5481 ext. 1119	Phone:	503/343-4134
Fax:	541/296-6906	Fax:	N/A
E-mail:	TBD	E-mail:	erik@commstructureconsulting.com

PROFESSIONAL SERVICES AGREEMENT

Terms and Conditions

This Professional Services Agreement (this "**Agreement**") is entered into by and between Commstructure Consulting, LLC ("**Commstructure**") and Quality Life Intergovernmental Agency ("**Q-Life**") for on-call consulting services as of the Execution Date referred to in the Summary of Terms (page 1 of this Agreement). (Commstructure and Q-Life are each referred to herein as a "**Party**" and collectively as the "**Parties**.") The Summary of Terms shall be incorporated with this Agreement by reference. The services will consist of individual Work Orders with specifically defined scopes of work, completion schedules, and fees to be negotiated between the parties.

1. Authorization to Proceed

Unless otherwise provided in this Agreement, execution of this Agreement by Q-Life will be authorization for Commstructure to proceed with the services outlined in the Scope of Work for each Work Order (the "**Services**"). Q-Life acknowledges and agrees that Commstructure will be providing the Services and the Work Deliverables (as defined in Section 11) specifically for and solely with respect to the Project and that attempts to reuse the Work Deliverables outside the context of the Project may cause substantial damage. Therefore, Q-Life covenants and agrees that it shall not use the Work Deliverables, and shall not permit the Work Deliverables to be used, other than with respect to the Project, unless it has received the specific written approval of Commstructure.

2. Compensation

2.1 Commstructure's compensation under this Agreement shall be as set forth in the Summary of Terms and may be based on any one of the following:

(a) Lump Sum. Under this compensation structure, Commstructure charges Q-Life a fixed lump sum amount for the Services to be performed for the Project; Commstructure shall be responsible for all wages or salaries of its employees and costs of subconsultants. The lump sum amount shall include all Direct Labor costs and Expenses, Indirect costs (overhead), and Profit.

(b) Negotiated Billing Rates. Under this compensation structure, Commstructure charges Q-Life on the basis of negotiated (hourly, daily, etc.) rates for work performed on Q-Life's Project by Commstructure employees of the indicated classifications. See Exhibit A for rate schedule. These rates are subject to annual adjustments and include all allowances for salary, overhead, and profit. Total Compensation is the maximum amount payable for the defined services, including indirect costs as identified under paragraph 2.2.

(c) Salary Multiplier. Under this compensation structure, Commstructure charges Q-Life rates equal to the direct wages or salaries Commstructure pays to its employees for work performed directly on the Project, multiplied by a negotiated multiplier as shown in Section F of the Summary of Terms to cover payroll-related taxes, payments, premiums, benefits, and other indirect costs, plus overhead and profit. Total Compensation is the maximum amount payable for the defined services, including indirect costs as identified under paragraph 2.2.

2.2 In addition to any of the fee structures set forth above in 2.1(b) and (c), Commstructure may charge Q-Life for Direct Expenses. Direct Expenses include those costs incurred on or directly for the Project, including, but not limited to, necessary transportation costs, including current rates for Commstructure vehicles; meals and lodging; laboratory tests and analyses; computer services; word processing services; telephone; printing, binding, and reproduction charges; all costs associated with outside consultants, and other outside services and facilities; and other similar costs. Reimbursement for Direct Expenses will be on the basis of actual charges when furnished by commercial sources and on the basis of current rates when furnished by Commstructure. In either case, a service processing charge of 15 percent will be added to Direct Expenses.

3. Payment to Commstructure

Commstructure will issue monthly invoices for the compensation due as a result of services provided under this Agreement to that time, less services previously billed. Invoices are due and payable on receipt. In the event that any portion of an invoice is disputed, payment will be made for the non-disputed amounts. Commstructure will charge interest at the rate of 1½ percent per month, or the maximum permitted by law if less, on all past-due amounts starting 30 days after date of invoice. Commstructure will credit payments first to interest and then to principal.

4. Standard of Care

Commstructure shall perform the Services in a manner consistent with the degree of care and skill ordinarily exercised by members of the same profession currently practicing under similar circumstances. Commstructure makes no warranties, express or implied, under this Agreement or otherwise, in connection with the Services.

5. Term and Termination

5.1 Term. The term of the Agreement shall be as set forth in the Summary of Terms. If a term is not specified in the Summary of Terms, Commstructure's obligation to render the Services under this Agreement will be for a period that may reasonably be required for the completion of the Services.

5.2 Termination For Cause. This Agreement may be terminated by (a) either Party if 1) the other Party fails to perform substantially in accordance with this Agreement through no fault of the other Party and does not commence correction of such failure within ten (10) days after written notice thereof and diligently

completes the correction promptly thereafter, or 2) the performance of the Services pursuant to this Agreement are delayed or suspended for more than ninety (90) days for reasons beyond Commstructure's control; (b) Commstructure, upon seven (7) days' written notice if Commstructure believes that Q-Life is requesting it to furnish or perform services contrary to Commstructure's responsibilities as a licensed professional.

5.3 For Convenience. Either Party may terminate this Agreement for any reason, or for no reason, upon thirty (30) days' written notice to the non-terminating Party.

5.4 Payment Upon Termination. On termination, Q-Life shall pay Commstructure for all authorized work performed up to the termination date plus termination expenses, including, but not limited to, costs related to the reassignment of personnel, subcontract termination costs, and related closeout costs.

6. Cost Opinions

Any cost opinions or economic evaluations provided by Commstructure will be on a basis of experience and judgment, but, since Commstructure has no control over market conditions, including cost of labor, materials, equipment, or services furnished by others, or bidding procedures, Commstructure does not warrant that bids, ultimate construction cost, or Project economics will not vary from these opinions. Q-Life waives any claim for the accuracy or inaccuracy of such opinions.

7. Limitation of Liability

Except as otherwise provided in Section 9 of this Agreement and except with respect to breaches by Q-Life of its covenants in Section 1 of this Agreement, but notwithstanding any other provisions of this Agreement, each Party's cumulative liability to the other Party for all claims, losses, damages, and expenses resulting in any way from the performance of this Agreement will not exceed the compensation received by Commstructure under this Agreement.

8. Indemnification

8.1 By Commstructure. Subject to Section 7, Commstructure shall indemnify and hold harmless Q-Life, Q-Life's officers, directors, partners, and employees from and against any and all costs, losses, and damages (including, but not limited to, all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) caused by breaches of this Agreement by Commstructure or its officers, directors, employees, and consultants.

8.2 By Q-Life. Subject to Section 7, Q-Life shall indemnify and hold harmless Commstructure, Commstructure's officers, directors, partners, employees, and any individuals or entities that have a contract with Commstructure to furnish services with respect to the Project from and against any and all costs, losses, and damages (including, but not limited to, all fees and charges of engineers, architects, attorneys, and other professionals, and all court or arbitration or other dispute resolution costs) caused by breaches of this Agreement by Q-Life or its officers, directors, employees, and consultants.

9. Insurance

Commstructure shall maintain public liability and property damage insurance that shall protect Commstructure from personal injury or property damage claims arising from its negligent acts or omissions in the performance of the Services under this Agreement. The limits of liability for such insurance shall be at least $1,000,000 combined single limit.

10. Confidentiality

10.1 Definition of Confidential Information. **"Confidential Information"** means all nonpublic information, in whatever form (including without limitation orally disclosed information), that either Party to this Agreement (each a **"Disclosing Party"**) designates as confidential at the time of disclosure to the Party that receives such information (each a "Receiving Party") or that, based on the nature of the information or circumstances surrounding its disclosure by or on behalf of Disclosing Party, Receiving Party should in good faith treat as confidential. Confidential Information includes without limitation, practices, procedures, specifications, drawings, sketches, models, samples, data, plans, computer programs, records, documentation, or other technical or business information. Except as otherwise indicated, the term **"Receiving Party"** also includes all affiliates of the Receiving Party. If information is disclosed in intangible form without being designated as confidential, Disclosing Party may still designate it as confidential by providing Receiving Party with written notice stating that designation and providing Receiving Party with a written summary of the confidential information, within twenty (20) days of initial disclosure.

10.2 Exclusion. Confidential Information does not include information that Receiving Party can document: (a) was generally known to the public at the time it was disclosed by Disclosing Party; (b) became generally known to the public other than through a breach of this Agreement by Receiving Party after the time of disclosure to Receiving Party by Disclosing Party; or (c) was independently developed by Receiving Party without reference to or use of Confidential Information.

10.3 Receiving Party Obligations. Receiving Party will not use or disclose any Confidential Information except in furtherance of the parties' mutually agreed business relationship. Receiving Party will not disclose, give access to, or distribute any Confidential Information to any third party, except upon Disclosing Party's prior, written authorization. Receiving Party will take reasonable security precautions to keep Confidential Information confidential, which precautions shall be at least as protective as the precautions Receiving Party takes to preserve its own Confidential Information of a similar nature.

11. Ownership

11.1 Work Deliverables. **"Work Deliverables"** shall mean the final plans, designs, reports, and/or other documents prepared by Commstructure for delivery or presentation to Q-Life as called for in each Work Order's Scope of Work. All Work Deliverables produced by Commstructure for or at the direction of Q-Life hereunder shall be the property of Q-Life and, to the extent subject to copyright protection, shall be deemed "work for hire" as such term is defined under

U.S. copyright law; provided, however that (a) Commstructure may retain copies of all such Work Deliverables in accordance with Section 13 of this Agreement, and (b) Q-Life irrevocably grants Commstructure a world-wide, perpetual, non-exclusive license to use, reproduce, create derivative works from, and distribute or have distributed to or by third parties, the Work Deliverables.

11.2 Project Documents. All Project Documents shall be the sole property of Commstructure. "**Project Documents**" shall mean all studies, reports, evaluations, designs, drawings, procedures, field data, notes, specifications, plans, and all other documentation, including all documents on electronic media that are produced or acquired by Commstructure for or at the direction of Q-Life pursuant to this Agreement, other than Work Deliverables.

12. Electronic Files and Data

Subject to the provisions of Section 11, Commstructure will provide certain information, including drawings and other electronic format data files, to Q-Life for Q-Life's use and reference. However, Commstructure is neither accountable nor responsible for the validity of data contained on electronic files once surrendered to Q-Life. Commstructure does not warrant the accuracy of the content as contained in the electronic file(s) against computer viruses, unauthorized revisions to the files, or any other alterations or data destruction to the file(s). Commstructure shall not have any liability for Q-Life use of any electronic form file(s) or its content, including without limitation, any transmittal of bugs, viruses, or other destructive or harmful programs, scripts, applets, or files to the computers or networks of Q-Life. Commstructure's preparation of a transfer copy of electronic data will be made or completed through reproduction from the file retained and archived at the offices of Commstructure. Q-Life acknowledges that the content of the transfer copy may not be an exact and virus-free copy of the master file. Q-Life acknowledges and agrees that Q-Life shall be solely responsible for inspection and testing of the electronic file(s) provided by Commstructure to verify the content is free from bugs, viruses, or other destructive or harmful programs, scripts, applets, or files, before accessing or using. The original files containing the information and data maintained at Commstructure shall be considered Confidential Information under the terms of Section 11.

13. Document Retention

13.1 Work Deliverables. Work Deliverables are the property of Q-Life and will be delivered to Q-Life at Q-Life's request. Notwithstanding the foregoing, Q-Life acknowledges and agrees that unless Q-Life specifically requests that such documents be delivered, all Work Deliverables left in Commstructure's possession after three (3) years following the completion of the Project, regardless of whether this Agreement may still be in effect, may be retained or destroyed by Commstructure in its sole discretion.

13.2 Project Documents. All Project Documents may be retained or destroyed by Commstructure in its sole discretion.

14. Compliance with Laws

Commstructure will: (a) comply with federal, state and local laws, ordinances, regulations, and orders as in effect as of the Execution Date with respect to its performance of the Services pursuant to this Agreement, (b) file all required reports and pay all filing fees and federal, state, and local taxes applicable to Commstructure's business as the same shall become due, and (c) pay all amounts required under local, state, and federal workers' compensation acts, disability benefit acts, unemployment insurance acts, and other employee benefit acts when due.

15. Notice of Lien

15.1 If Q-Life is the Owner. If Q-Life is the owner of the property on which the Services are to be performed, by signing this Agreement, Q-Life is on notice and acknowledges Commstructure's right to claim a lien against the improvement called for by this Agreement for the cost of the Services if Q-Life fails to pay all sums owed to Commstructure under this Agreement.

15.2 If Q-Life is not the Owner. If Q-Life is not the owner of the property on which the Services are to be performed, Q-Life, when requested by Commstructure, shall put the owner on notice of Commstructure's right to claim a lien against the improvement called for by this Agreement for the cost of the Services.

16. Independent Contractor

Commstructure shall be deemed to be an independent contractor in the performance of this Agreement and shall not be considered or permitted to be an agent, employee, servant, joint venturer, or partner of Q-Life, its parent or affiliates, if any. All persons furnished, used, retained, or hired by or on behalf of Commstructure shall be considered to be solely the employees, personnel, or contractors of Commstructure, and Commstructure at all times shall maintain such supervision and control over its employees, personnel, and contractors as is necessary to preserve its independent contractor status. Commstructure shall be responsible for payment of any and all unemployment, social security, withholding, and other payroll taxes for its employees, as applicable, including any related assessments or contributions required by law. The parties agree that Commstructure is and will continue to be an independent contractor as that term is defined by ORS 670.600.

17. Dispute Resolution

All disputes arising between the Parties relating to the making or performance of the Services shall be resolved in the following order of preference:

(A) By good faith negotiation between representatives of Commstructure and Q-Life who have authority to resolve the dispute fully and finally. The existence and substance of any negotiations pursuant to this Section shall be considered Confidential Information under this Agreement, shall be treated as compromise and settlement negotiations for purposes of Federal Rule of Evidence 408 and any comparable provision and shall not be used by any Party in any court, agency, or tribunal in any country for any reason.

(B) In the event that the negotiations provided by Section 17(A) fail to resolve the dispute, the

Parties shall endeavor to resolve the dispute by non-binding mediation under the Commercial Mediation rules of the American Arbitration Association ("**AAA**") using a neutral mediator mutually acceptable to the Parties and with the costs therefore shared equally. All proceedings pursuant to this Section 17(B) shall be considered Confidential Information under this Agreement, shall be treated as compromise and settlement negotiations for purposes of Federal Rule of Evidence 408 and any comparable provision, and shall not be used by any Party in any court, agency, or tribunal in any country for any reason.

(C) In the event that the mediation provided by Section 17 (B) fails to resolve the dispute, the dispute shall be resolved pursuant to Section 18.1.

(D) Notwithstanding anything to the contrary contained in this Section, the Parties reserve the right to seek equitable remedies with respect to the enforcement of any provision of this Agreement.

18. General Provisions

18.1 Governing Law; Venue; Attorneys' Fees. This Agreement will be governed by the laws of the state of Oregon, excluding conflict of laws provisions. Exclusive jurisdiction and venue will lie with the state and federal courts sitting in Wasco County, Oregon, and each of the parties hereby irrevocably consents to such jurisdiction. In any action or suit to enforce any right or remedy under this Agreement or to interpret any provision of this Agreement, the primarily prevailing Party will be entitled to recover its costs, including reasonable attorneys' fees.

18.2 Notices. Any notice required under this Agreement shall be in writing, addressed to the appropriate Party at its address on the Summary of Terms, and given personally, or by registered or certified mail, postage prepaid, or by a commercial courier service. All notices shall be effective upon the date of receipt. The addresses, phone numbers, facsimile numbers, and email addresses for the Parties provided in the Summary of Terms may be changed by means of a written notice given to the other Party.

18.3 Assignment. Neither Party may assign this Agreement or any of its rights and obligations hereunder without the prior written consent of the other Party, which consent shall not be unreasonably withheld, except that either Party may assign this Agreement to an Affiliate without the other Party's prior written consent. If such an attempted assignment occurs, the non-assigning Party will have the right to terminate this Agreement upon written notice to the assigning Party. This Agreement will be binding upon, enforceable by, and inure to the benefit of the parties and their respective successors and assignees to the extent permitted by this Section. "**Affiliate**" means, with respect to any legally recognizable entity, any other such entity directly or indirectly controlling, controlled by, or under common control with such entity.

18.4 Third Party Beneficiaries. This Agreement gives no rights or benefits to anyone other than Q-Life and Commstructure and has no third party beneficiaries.

18.5 Survival. All express representations, covenants, indemnifications, or limitations of liability included in this Agreement will survive its completion or termination (for any reason) for a period of three (3) years, provided, however, that the confidentiality provisions of Section 11 shall survive indefinitely.

18.6 Non-Waiver. No waiver of any provision of this Agreement will be effective unless it is in writing signed by an authorized executive of the waiving Party and labeled as a "**Waiver**," and no such waiver will constitute a waiver of any other provision(s) or of the same provision on another occasion. Non-enforcement of any provision of this Agreement by either Party shall not constitute a waiver of that provision nor shall it affect the enforceability of that provision or of the remainder of this Agreement.

18.7 Severability. If a court of competent jurisdiction holds any term, covenant, or restriction of this Agreement to be illegal, invalid, or unenforceable, in whole or in part, the remaining terms, covenants, and provisions will remain in full force and effect and will in no way be affected, impaired, or invalidated. If any provision in this Agreement is determined to be unenforceable in equity, then the court making that determination will have the power to reduce or limit such provision, and such provision will be then enforceable in equity in its reduced or limited form.

18.8 Headings. The headings used in this Agreement are inserted for convenience only and shall not be used in the interpretation or construction of the terms hereof.

18.9 Counterparts. This Agreement may be executed in any number of counterparts, each of which, when executed, shall be deemed to be an original, and all of which together shall be deemed to be one and the same instrument.

18.10 Entire Agreement. This Agreement constitutes the entire agreement between the parties with respect to the subject matter hereof and supersedes all prior and contemporaneous agreements or communications with respect to that subject matter.

19. Exhibits and Schedules

The following exhibits and schedules are hereby made a part of this Agreement:

Exhibit A – 2006/2007 Rate Schedule

Signature Page – Professional Services Agreement

The Parties have caused this Agreement to be executed by their duly authorized representatives as of the Execution Date referred to in the Summary of Terms.

Q-LIFE

By: _____

Name: Dan Ericksen
(Please Print)

Title: President

Date: _____

COMMSTRUCTURE, INC.

By: _____

Name: Erik Orton
(Please Print)

Title: President

Date: 10/23/2006

Exhibit A – 2006 / 2007 Rate Schedule

Description	Basis	Rate
OSP Project Manager	Per Hour	$110.00
OSP Designer	Per Hour	$100.00
CAD Drafter	Per Hour	$80.00
Project Coordinator/ Designer to assist Manager	Per Hour	$70.00
Right of Way Acquisition Specialist	Per Hour	$75.00
Owner Representative / Construction Oversight	Per Hour	$95.00

Travel expenses including travel time, meals, lodging and miscellaneous expenses will be reimbursed at actual cost plus 10% for projects requiring travel beyond a 50 mile radius of the Commstructure home office.

All mileage will be reimbursed per the current effective IRS rate at the time driven.

Reprographics, courier services, long distance and other reimbursable direct expenses shall be reimbursed at actual cost plus 10%.

AMENDMENT NO. 1
TO AGREEMENT FOR PROFESSIONAL SERVICES

BETWEEN

Q-Life
313 Court Street
The Dalles, Oregon 97058

and

Commstructure Consulting, LLC
16348 Wittke Court
Oregon City, Oregon 97045

Date: August 25, 2009

The Terms and Provisions of the Agreement for Professional Services between Q-Life and Commstructure shall be amended as follows:

Item F - Term: The Term of the Agreement shall automatically renew for successive one (1) year terms from the date this Amendment is executed unless terminated in accordance with Section 5 or modified by Amendment.

Exhibit A – The Standard Hourly Rates shall be amended with the 2009 / 2010 Rate Schedule

See attached Exhibits:

Exhibit A – Standard Hourly Rate Schedule – 2009 / 2010 Rate Schedule

Approved By:

Q-LIFE		COMMSTRUCTURE CONSULTING, LLC	
By:		**By:**	
Title:	President	**Title:**	President
Date:	8-27-09	**Date:**	August 25, 2009

EXHIBIT A – STANDARD HOURLY RATE SCHEDULE

Unit #	Unit Description	Basis	2009 / 2010 Rates
CC-H100	OSP Project Manager	Per Hour	$ 110.00
CC-H101	OSP Designer I	Per Hour	$ 100.00
CC-H102	OSP Designer II	Per Hour	$ 85.00
CC-H103	OSP Designer III / Field Technician	Per Hour	$ 65.00
CC-H104	CAD Drafter	Per Hour	$ 80.00
CC-H105	Project Coordinator / Designer to assist Manager	Per Hour	$ 70.00
CC-H106	Right of Way Acquisition Specialist	Per Hour	$ 75.00
CC-H107	Owner Representative / Construction Oversight	Per Hour	$ 85.00
CC-H108	Field Technician / Survey Data Collection – Non Technical	Per Hour	$ 55.00

Travel Expense and Reimbursable Expenses

Standard Hourly Rates do not include provisions for travel expenses or other reimbursable direct expenses (i.e. express mail, permit fees, large format color plotting, specialized base mapping data for specific communities, reprographics, binding, etc.)

Travel expenses including travel time, meals, lodging and miscellaneous expenses will be reimbursed at actual cost or GSA published rates plus 10% for projects requiring travel beyond a 50 mile radius of the Commstructure home office. Travel compensation is negotiable based on project scope and locations.

All mileage incurred will be reimbursed per the current effective IRS reimbursement rate at the time of travel.

Reprographics, courier services and other reimbursable direct expenses shall be reimbursed at actual cost plus 10%.

Consultant Interviews

- Scope of Work
- Adam Haas – no materials submitted – return to agenda
- Nancy Jesuale – no materials submitted – return to agenda
- Joanne Hovis – Qualifications
- Joseph Franell – no materials submitted – return to agenda

QualityLife Intergovernmental Agency

January 6, 2017

QLife is an intergovernmental agency consisting of the City of The Dalles and Wasco County, governed by a Board of Directors and run by an Administrator. QLife provides broadband, Ethernet, wide area networks, internet access, and virtual private networks through local internet service providers. Qlife has been operational since December of 2003. The original mission and purpose of QLife was to bring a middle mile fiber solution to the City of The Dalles in an effort to meet certain needs of critical agencies for reliable high speed data services and to provide and promote an environment for successful economic development. Qlife is a government agency with no employees which makes competing with the private sector entities difficult. Qlife is looking for help in evaluating our position in the market and providing assistance in determining where we are headed and if and how we can compete in this marketplace.

Over the last 13 years Qlife has provided middle mile service in the Dalles, OR successfully to many anchor tenants and to ISP's or other fiber providers as needed. In essence Qlife has met its vision to leverage technology planning efforts and our investment in middle-mile infrastructure to enhance Wasco County's economic vitality. Our mission to enhance quality of life by providing a reliable, open-access solution to connectivity to the City of the Dalles has also been achieved. Recently Qlife in partnership with City of Maupin has undertaken a fiber to the home project for the residents of Maupin. While this project is in line with our mission it is not in line with our middle mile market niche. Qlife appears to be at a crossroads about how we should be positioned in the market. The nature of this business is rapidly changing and competition is fierce. Some providers appear to be poised to over-build the Qlife fiber network if things do not change. This project would include an analysis of if it is prudent to continue in this line of business or to sell the entity. Qlife would like to have a mapped out plan for how to reach the next level and what that next level looks like based on our financial position and ability to operate in this market going forward. This plan should include an analysis of potential new business opportunities in a rural setting where building fiber is not necessarily cost effective. Additionally, this analysis should look at the feasibility of moving into becoming a fiber to the home provider in our service area. Qlife would like an analysis of, and recommendations for change to our pricing structure as compared to the marketplace.

QLife would ask that each consultant come prepared to present a proposal to the QLife Board of Directors. Each proposal should include a plan to address the topics discussed within this scope of work, hourly cost of services, number of hours estimated to complete project, proposed timeline of completion and the deliverables QLife can expect when the project is complete. We ask that each presentation not exceed 20 minutes.

Please contact Tawny Cramer at 541-506-2550 or tawnyw@co.wasco.or.us to schedule a time to present to the Board during the January 26th QLife Board meeting.

ctc technology & energy

engineering & business consulting

January 20, 2017

Ms. Tawny Cramer
Office Manager
Wasco County
511 Washington St., Suite 101
The Dalles, OR 97058
tawnyw@co.wasco.or.us

Subject: Qualifications to provide QLife consulting services

Dear Ms. Cramer:

Columbia Telecommunications Corp. (d/b/a CTC Technology & Energy) (CTC) is pleased to submit these qualifications to support QLife in evaluating its market position and exploring the feasibility of developing a fiber-to-the-premises (FTTP) offering. I look forward to presenting our proposal at your Board meeting on January 26th.

We are proud to offer a unique set of strategic planning, business modeling, and engineering capabilities. Notably, we have developed similar market evaluations and fiber feasibility studies for many of the leading cities in North America, including Portland, San Francisco, Seattle, Boulder, and Palo Alto.

Please do not hesitate to contact me if I can provide any additional information about CTC or our project approach. We look forward to supporting QLife on this important project.

Sincerely,

Joanne S. Hovis

Joanne S. Hovis | President, CTC | jhovis@ctcnet.us

Contents

1. Company Information

CTC is an established, woman-owned consulting firm that offers a unique combination of qualifications and capabilities in broadband financial analysis, business planning, engineering, and network strategic planning. Founded in 1983, we have decades of experience providing independent financial, strategic, and technical, guidance for public and non-profit communications networks, including those of state and local governments, non-profit consortia, universities, and municipal utilities.

CTC offers extensive experience and expertise in all aspects of feasibility studies, needs assessment, strategic and business planning, and network engineering. We have conducted similar assessments—including market surveys, business plans, engineering analyses, and financial pro formas—for public sector clients nationwide, including (in just the past five years) the cities of Atlanta, Boston, Boulder, Palo Alto, San Francisco, Santa Cruz, and Seattle.

In Palo Alto, for example, CTC developed both a fiber-to-the-premises (FTTP) master plan and a wireless network plan. In the FTTP engagement, we worked with the City's Information Technology and Utilities departments to research and prepare a strategic plan that outlines the feasibility of expanding the City's existing fiber system to provide citywide FTTP. We currently are developing Dig Once recommendations for the City.

Many of our engagements have focused on low-risk public sector strategies to expand existing broadband infrastructure to promote economic development, enhance the availability of high-bandwidth services to local businesses, and increase broadband competition.

We specialize in helping clients develop phased approaches for implementing fiber networks to meet their needs; we are particularly experienced with helping communities to identify private partners for broadband communications initiatives. Our goal in these engagements is to develop relationships in which the private partner shares the risk of expanding a network to serve the community's broader needs. In these engagements, too, we are vigilant about protecting the community's interests, and managing the community's risk with respect to partner financing and operations.

CTC is a highly respected firm with considerable experience and intellectual resources. Our reputation rests on our track record of providing independent, objective, and unbiased guidance. For more than three decades, we have served the public sector in evaluating its broadband deployment efforts and in bringing an independent, sometimes critical, eye to communications efforts.

CTC principals Joanne Hovis and Andrew Afflerbach authored "Gigabit Communities," an independent white paper on gigabit-facilitation strategies commissioned by Google.[1] Ms. Hovis recently co-authored

[1] See www.Gigabit-Communities.com. While this work was commissioned and supported by Google, CTC's analysis was entirely independent and focused on promoting city needs, rather than those of Google or any other network deployer. CTC and Google agreed contractually that CTC had complete editorial control over the content of the work. We are proud of our strong working relationship with Google Fiber, but maintain independence as part of our mission to serve public sector clients.

"The Emerging World of Broadband Public–Private Partnerships: A Business Strategy and Legal Guide" (published by the Benton Foundation).[2]

Ms. Hovis and Dr. Afflerbach also co-authored, with the New America Foundation's Open Technology Institute, a report on local broadband networks: "The Art of the Possible: An Overview of Public Broadband Options."[3] That study was cited in President Obama's report on public sector fiber networks, "Community-based Broadband Solutions: The Benefits Competition and Choice for Community Development and High Speed Internet Access."[4]

In addition, Ms. Hovis, Dr. Afflerbach, and other CTC staff have authored guides on community fiber development for the Utilities Telecommunications Council and the Tennessee Valley Public Power Association. These and other key documents are available in the library on our website.[5]

We have a robust roster of national and international clients, and our workload reflects that success. As we have proven over the past three decades, however, we are adept at managing our clients' needs and our staffing levels. We pride ourselves on our track record of completing projects on time, regardless of the size or complexity of the tasks at hand. We commit to providing an exceptional level of service and to meeting your timeline.

Engaging with CTC means receiving customized analysis and the level of time, consideration, and care required to provide you with the answers you need. This level of service is complemented by our proven ability to communicate our findings and recommendations—in high-quality written reports and engaging in-person presentations—to decision-makers, elected officials, citizens, and other interested project stakeholders.

2. Staff Qualifications

Project Manager

Joanne Hovis, *CTC President and Director of Business Consulting,* will be the project manager/program manager and will lead all strategic and business planning tasks. An attorney who has provided network business model analysis and recommendations for some of the largest public broadband networks in the country (i.e., large-scale concession planning and design-build projects), she is a nationally recognized authority on the broadband market and community broadband topics—and on the evolving role of government in the provision of communications services to the public.

Joanne oversees all ongoing CTC analysis for local government clients and provides innovative business planning for communications networking initiatives such as the pioneering broadband P3s in the Commonwealth of Kentucky and the cities of Boulder, Madison, Westminster (MD), and Huntsville (AL).

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[2] https://www.benton.org/sites/default/files/partnerships.pdf
[3] http://www.ctcnet.us/publications/the-art-of-possible-an-overview-of-public-broadband-options/
[4] http://www.whitehouse.gov/sites/default/files/docs/community-based_broadband_report_by_executive_office_of_the_president.pdf
[5] www.CTCnet.us/library

Joanne has extensive experience developing business case and business model scenarios for public sector broadband initiatives; she draws on her deep knowledge of the decision-making process and decision metrics employed by network developers and investors, and her related understanding of the municipal bond market (e.g., credit analysis and ratings). She leads the CTC team that advises the states of Connecticut, Kansas, Kentucky, Massachusetts, and New Mexico, the cities of Atlanta, Boston, Palo Alto, San Francisco, Seattle, and Washington, D.C., and the statewide broadband networks in Colorado, Maryland, and Pennsylvania.

Joanne is CEO of the Coalition for Local Internet Choice (CLIC) and a former president of the National Association of Telecommunications Officers and Advisors (NATOA). She is a member of the boards of directors of the Benton Foundation and the Fiber to the Home Council.

Key Personnel

Andrew Afflerbach, Ph.D., P.E., *CTC Director of Engineering,* specializes in planning, design, and implementation of communications infrastructure and networks. His expertise includes emerging fiber and wireless technologies and state-of-the-art networking applications. As Director of Engineering, Andrew oversees all engineering work performed by CTC. He is a licensed Professional Engineer in the states of Delaware, Illinois, Maryland, and Virginia.

Andrew has planned and overseen implementation of a wide variety of government and public safety networks, including the infrastructure of state and metropolitan area governments. He prepared extensive technical analyses for submission to the Federal Communications Commission (FCC) and policymakers on national fiber expansion to underserved schools and libraries, on due diligence for the IP transition of the telecommunications infrastructure, and on potential technical frameworks for wireless network neutrality. He also served as a senior adviser to Crown Fibre Holdings, the public entity that is directing New Zealand's national FTTP project.

Andrew has architected, designed, and overseen implementation of numerous broadband networks for local and state governments, including those of Washington, D.C.; Crown Fibre Holdings (Government of New Zealand); San Francisco; the Delaware Department of Transportation; the Maryland Transportation Authority; and many large counties. He oversaw the development of system-level broadband designs and construction cost estimates for Atlanta, Seattle, Palo Alto, Madison, Boulder, Kentucky, and Connecticut. He is overseeing the detailed design of the city-built FTTP network in Westminster, Maryland.

Tom Asp, *CTC Principal Engineer and Analyst,* has more than 25 years of nationwide experience as an engineer and analyst in communications and public power systems. His experience includes telecommunication system design and evaluation of network feasibility. He has developed financial statements and prepared quantitative business plan analyses for municipal and utility clients nationwide. He also has extensive experience presenting to local and state government officials, conducting needs assessment interviews, and facilitating stakeholder sessions.

Matthew DeHaven, *CTC Principal Engineer*, currently is managing the deployment of public sector fiber networks in Maryland, North Carolina, Virginia, and Illinois. He served as the Portfolio Manager for the One Maryland Inter-County Broadband Network; as the lead technical consultant on that project, he

oversaw the use of approximately $100 million in grant and matching funds to build approximately 800 miles of fiber optics and directly connect approximately 650 community anchor institutions, including schools, libraries, government buildings, community colleges, and public safety agencies. He studied engineering at Johns Hopkins University.

Brian Proffit, *CTC Senior Analyst,* leverages his industry relationships and experience to coordinate efforts to engage carriers as partners in public bandwidth infrastructure projects. He supports clients in analyzing carrier activity, conducting outreach to carriers, and planning and developing P3s. Brian came to CTC from Zayo Group, where he served as Director of Research & Education Solutions. A 15-year veteran of the telecommunications industry, he has focused on government clients' telecommunications needs in previous roles at Level 3, TelCove, RCN, and XO Communications.

Marc Schulhof, *CTC Senior Analyst and Technical Writer,* has more than 20 years of experience in technical writing, financial journalism, and corporate communications. Marc previously was the worldwide editor-in-chief of CIO program websites at IBM, a global editor at PricewaterhouseCoopers Consulting, and an associate editor at *Kiplinger's Personal Finance*. He has a master's degree in journalism from Northwestern University.

Eric Wirth, *CTC Senior Project Engineer,* has more than 10 years of communications engineering experience; he specializes in evaluating broadband (video, voice, and data) telecommunications networks, analyzing emerging broadband technologies, and designing broadband networks for institutional uses. In addition, Eric has developed fiber network designs and cost estimates for CTC clients including the cities of Atlanta, Boulder, Madison, and Palo Alto. He has an engineering degree from the University of Virginia.

3. References

We invite you to contact the following references about the quality, independence, and timeliness of CTC's work. Our proposed project manager for this engagement, Joanne Hovis, led the CTC team for each of these projects.

City and County of San Francisco

Mr. Brian Roberts
Senior Policy Analyst, Department of Telecommunications & Information Services
(415) 581-4061, brian.roberts@sfgov.org

CTC currently is leading a major broadband feasibility assessment for the City and County of San Francisco. We are providing strategic, financial, and technical advisory services as part of a broad effort to analyze the City's options for its "Broadband for San Francisco Project." Our work will include facilitating "needs assessment" meetings; developing a high-level network design and cost estimates; evaluating funding and financing options; conducting detailed financial analysis; and recommending roles for the City in all key elements of the project.

We previously prepared a series of path-breaking analyses of the feasibility of the City building and operating a fiber-to-the-premises (FTTP) network—including a system design and detailed analysis of candidate architectures and open access models. The project also included analysis of multiple business models and business recommendations customized for San Francisco's unique circumstances.

CTC assisted the City in developing and evaluating options for backhaul to serve City-operated Wi-Fi service to the public and to residents of public housing.

CTC also provided ongoing consulting and strategic guidance with respect to an FTTP pilot and related technology projects, and helped the City with business planning, financial analysis, and engineering design to support its preparation of an extensive application for federal grant funding. The market research analysis provided measurements to predict emission reductions and other ancillary benefits of facilitating work-at-home initiatives through an FTTP implementation.

In our most recent engagement, CTC developed guidelines for detailed implementation, and technical specifications for a municipal "dig once" policy to facilitate the cost-effective expansion of broadband infrastructure throughout the City.

City of Palo Alto, California

Jonathan Reichental, Ph.D
Chief Information Officer
Information Technology Department
250 Hamilton Ave.
Palo Alto, CA 94301
650.329.2182, 650.617.3109 (fax), jonathan.reichental@cityofpaloalto.org

CTC is assisting the City in its negotiations with Google Fiber over joint builds and other partnership options related to a potential citywide FTTP buildout.

This engagement represents a continuation of CTC's long commitment to helping the City meet its broadband goals. In two parallel projects in 2015, for example, CTC developed both a fiber-to-the-premises (FTTP) master plan and a wireless network plan for the City. These feasibility analyses required an extensive engineering review of the City's existing physical infrastructure and operational capabilities.

In the fiber realm, CTC determined the extent to which the City's infrastructure could be used to enable FTTP buildout. We developed a full FTTP feasibility study for a range of potential business models, including public, private, and P3.

In the wireless engagement, CTC conducted a system-level requirements analysis and a needs assessment, and recommended wireless technologies, network designs, and business models.

CTC previously provided strategic guidance and advice to the City on expanding its dark fiber network to create opportunities for enhanced municipal and commercial services. We assessed how to leverage existing infrastructure to promote commercial wireless broadband deployment and improve municipal

Smart Grid and public safety technologies. We also prepared a framework for establishing a public-private partnership to encourage greater infrastructure deployment.

CTC engineers are also currently developing a "dig once" ordinance and related processes for the City.

City of Seattle

Michael Mattmiller
Chief Technology Officer
Seattle Information Technology
700 5th Ave., Suite 2700
Seattle, WA 98104
206.233.7937, 206.684.0911 (fax), michael.mattmiller@seattle.gov

As the City's broadband consultant, CTC has delivered business, technical, and strategic guidance to the City as it has explored options for FTTP network deployment in light of its changing local marketplace and the emergence of new business models.

In our current engagement, CTC is developing a strategic plan that will recommend technical approaches to filling broadband gaps (e.g., in underserved neighborhoods) and a sustainable business model for deployment. CTC is engaging various stakeholders and agencies on the City's behalf, and conduct outreach to private sector entities—including Internet service providers and wireless carriers—through an RFI process. CTC's engineers and analysts will evaluate the potential for P3s, examine the feasibility of using the City's fiber to support Wi-Fi, and provide a high-level financial and technical approach to fill the City's broadband gaps.

This engagement follows on multiple significant projects we have completed with the City and its electric utility over more than eight years. In 2015, we completed a major FTTP feasibility study (http://www.seattle.gov/tech/initiatives/broadband/studies-and-history) that included residential and business market research, financial projections for multiple buildout approaches, and a risk assessment.

CTC has previously performed market research and developed a feasibility study, a business case analysis, and an "off-the-balance-sheet" benefits analysis for a proposed citywide FTTP network.

The first study, "FTTP Municipal Broadband Risks and Benefits Evaluation," included an internal needs analysis, market research of both residential and business customers; an assessment of competing services and technologies; and an evaluation of the business case and business risks.

Following on that report, CTC researched and wrote an "FTTP Benefits Evaluation," which explored the benefits of FTTP beyond the traditional balance sheet, including cost avoidance, monetary savings, and environmental impact. Notably, this report was one of the first of its kind to qualify and quantify (where possible) community-wide benefits of ubiquitous broadband connectivity such as enabling increased telecommuting, reductions in greenhouse gas emissions, and positive impacts on vulnerable populations such as the elderly and low-income residents.

In the third phase of the project, CTC advised the Mayor of Seattle regarding the U.S. communications market and business planning strategies for a citywide fiber enterprise. CTC led and facilitated a business planning working group comprised of the Mayor's senior staff, the directors of the City's electric and water/sewer utilities, and the City's Chief Technology Officer.

City of Boulder

Mr. Don Ingle
Chief Information Officer
Information Technology Department
(303) 441-4183, ingled@bouldercolorado.gov

CTC wrote a comprehensive broadband feasibility study for the City of Boulder.[6] As an integral part of that report, in early 2016, CTC helped the City write and administer an RFI to identify potential for-profit and non-profit entities interested in partnering with the City to develop a citywide fiber-to-the-premises (FTTP) network.

CTC engineers also evaluated technical and operational options for deploying a scalable outdoor Wi-Fi network in the City's downtown area. Our goals were to ensure that the Wi-Fi design and components enabled roaming between the outdoor areas and nearby governmental buildings, provided public Wi-Fi connectivity within a defined area, and were interoperable with the City's existing infrastructure and current processes.

City of Atlanta

Kristin Wilson
Deputy Chief Operating Officer
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Atlanta, Georgia 30303
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CTC currently is advising the City on strategic and tactical approaches it can take to plan, build, and operate a citywide backbone fiber network to cost-effectively serve its internal needs, and enable competition and improved services in the City's residential and business broadband markets.

Notably, we are guiding the City in its ongoing discussions with Google Fiber, Verizon, AT&T, and other telecommunications providers about options for joint builds and other potential partnership approaches. Our support includes technical, financial, and strategic planning expertise.

[6] The final report is available on our website: http://www.ctcnet.us/news/city-of-boulder-releases-ctc-report/

In the beginning phases of this long-term engagement, we evaluated the City's existing network infrastructure and designed the fiber component of its large-scale buildout around traffic and Smart City communications—the first such deployment to support Smart City in the U.S. on this scale. In addition to our technical due diligence and project engineering, we facilitated discussions with the city's range of stakeholders about their fiber and broadband needs, and coordinated with the private sector companies that are building or already operating networks in the City.

We have also developed RFIs and RFPs to serve a range of interrelated needs to further the City's partner identification efforts. For example, we wrote an RFI to seek P3 opportunities and funding for Smart City infrastructure. And we wrote a second RFI to solicit interest and input for a P3 to build out wireless networks that would deliver free public Wi-Fi and support Smart City communications within the downtown and major park areas, and in the Mayor's designed corridors. We also developed an RFP for City fiber construction on the routes where the City is not obtaining fiber from private partners.

City of Westminster, Maryland

Dr. Robert Wack
Common Council President
443.340.3227, rwack1@comcast.net

The Westminster model that CTC pioneered is the most influential broadband P3 in establishing the model of city-owned fiber and private use of that fiber. This demand-driven model, which is referenced extensively in the San Francisco BLA report, was the first of its kind. (For more details, see CTC's website: http://goo.gl/h14Lqi.)

The construction of the City's FTTP network and its groundbreaking partnership are the culmination of a multi-year engagement with CTC. CTC first prepared an FTTP feasibility study, cost estimate, and business case for the City in 2012 and 2013. Our report, which focused on maximizing available backbone network connectivity, included a technical design and cost estimates for two last-mile FTTP pilot projects (one focused on residential customers, one focused on businesses).

Based on the strength of the City's commitment to its principles, and the outcome of the feasibility analysis, the City decided to move forward with the small-scale pilot projects.

As that focused construction began, CTC continued to work closely with the City to establish its principles and risk tolerance, then designed a potential P3 model that would achieve a balance between those guiding forces. We established the City's preferred role in each aspect of network construction and operations, developed criteria for evaluating potential partnerships, and develop a financial analysis tool to model a range of assumptions.

Based on these parameters, we then wrote an RFP to identify a private partner that would assume operating risk in providing services to the public over the City's FTTP infrastructure. The RFP led to successful negotiations, led by CTC President Joanne Hovis, and the announcement of a first-of-a-kind partnership with Ting Internet.

CTC continues to support the 80-mile FTTP deployment over a range of tasks spanning fiber infrastructure engineering, network design, construction bidding, construction oversight, and quality assurance inspection

City of Huntsville, Alabama

Harrison Diamond
Business Relations Officer
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Huntsville, AL 35801
256.427.5182,
harrison.diamond@huntsvilleal.gov

CTC conducted broadband feasibility planning for the City and identified a range of options for models and approaches. We wrote the RFI through which the City launched its efforts to identify a private partner for citywide FTTP deployment. That process ultimately led to the City's negotiations and agreement with Google Fiber—a partnership that follows the Westminster model. Huntsville Utilities will leverage its poles and infrastructure to construct its own FTTP citywide network with Google Fiber acting as anchor tenant on the network. For more details, see CTC's website: http://goo.gl/i2jtZS.

Commonwealth of Kentucky

Mike Hayden
Chief Operating Officer
Kentucky Communications Network Authority
502.782.2535, mike.hayden@ky.gov

CTC was the lead broadband consultant for Kentucky's broadband public–private partnership—the only broadband initiative ever executed in the U.S. that utilizes a traditional P3. We prepared Kentucky's feasibility study, led the technical and financial consulting and analysis, advised on procurement, and were central to negotiations of the state's $250 million to $350 million concessionaire agreement with Macquarie Capital in December 2014.

CTC's involvement with the Governor's planned statewide broadband network, now known as Kentucky Wired, began with CTC engineers performed a technical assessment of the state's current network plans, developed a strategy for fiber construction, and provided detailed guidance on network operations. Our business analysts assessed the state's current network financial models, refined projections, and collaborated on the development of a sustainable governance and business model.

CTC later developed an RFI to identify potential fiber collaborators for the Commonwealth. The RFI attracted responses from more than a dozen candidates—including service providers, technology companies, equity partners, and concessionaires—and made it possible for the CTC team to refine the Commonwealth's business model and develop an RFP that more closely fit the business model and the firms' capabilities.

We completed a number of technical tasks that were high priorities during the negotiations. These tasks including development of service level agreements with the concessionaire, review of the cost proposals, value engineering, establishing dialogue with utility pole owners, and identifying potential economies in the construction plans (such as potential placement of fiber infrastructure in the power space on the utility poles).

At the state's request, we also conducted outreach to cities and counties across the state to determine the best ways for localities to join the network, including by developing local broadband infrastructure that would be the on and off ramps to the network.

Cities of Urbana and Champaign / University of Illinois (UC2B Network)

Mike Smeltzer
Board Member
217.369.6022, mike@uc2b.net

In late 2016, CTC prepared an RFP to identify a private partner to operate and expand the existing FTTP network in Champaign–Urbana, Illinois (see http://www.uc2b.net/uc2b2016/rfp/). This RFP process was an extension of our long-term engagement with UC2B, and represented our continued efforts to enable the network to achieve its goals of supporting digital inclusion in the community, enhancing broadband competition for residents, and fostering innovation.

CTC has been the strategic and business planning consultant to Urbana, Champaign, and the University of Illinois for more than seven years—since the coalition first conceived of constructing a middle-mile fiber network to connect community anchor institutions.

Following construction of the middle-mile fiber, we prepared a request for information (RFI) to enable the cities and the university to identify a private partner that would finance and operate an FTTP expansion of the network to serve 100 percent of the community. We evaluated potential partners' proposals, then helped to negotiate with two partners to reduce the community's risks and ensure that a partnership would achieve the coalition's policy goals for digital inclusion.

As a result of the coalition's final partnership, UC2B secured an open access Gigabit FTTP network buildout that, based on the negotiated agreement, would protect its public policy interest by providing the same opportunity for access to the entire community. In return, UC2B's partner—the ISP and network operator iTV3—would have access to UC2B's existing middle-mile infrastructure (which iTV3 would operate) and the foundation of a significant last-mile consumer network.

City of Boston

Jascha Franklin-Hodge
Chief Information Officer
Department of Innovation and Technology
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Boston, MA 02201
617.635.3358, Jascha.Franklin-Hodge@boston.gov

CTC principals Joanne Hovis and Andrew Afflerbach are assisting the City with strategic guidance in confidential negotiations with potential broadband service providers.

In a parallel engagement, CTC engineers and analysts are evaluating and providing recommendations related to the City's range of strategic options for deploying fiber optics to connect its public schools and government facilities.

As part of our feasibility study, CTC's business analysts and engineers reviewed the engineering that the City had already completed; evaluated the stakeholders' previously identified needs and concerns; and analyzed both the City's existing infrastructure assets and the general scope of the fiber network envisioned by the City.

We are now exploring a wide range of public and public–private options for maximizing the benefits of the City's planned investment to get direct fiber connectivity to schools and government buildings.

We developed an RFI for the City to identify the fiber providers and potential providers in the public rights-of-way (PROW). We have led extensive discussions with middle mile and fiber-to-the-tower (FTTT) carriers about their potential roles in working with the City.

As one outcome of our work, we determined that the fiber construction costs in the City are sufficiently high that the City should use existing infrastructure as much as possible. Accordingly, CTC engineers reviewed fiber that had been installed through the City's longstanding shadow conduit policy, which obligated infrastructure companies to provide the City with fiber and conduit under their franchise and PROW agreements. We are preparing an RFP to establish partnerships that will enable the City to maximize use of existing construction and obtain dark fiber to schools and government buildings.

State of Connecticut

Elin Katz
Consumer Counsel
Office of Consumer Counsel
Ten Franklin Square
New Britain, CT 06051-2605
860.827.2901, 860.827.2929 (fax), Elin.Katz@ct.gov

CTC is assisting the State of Connecticut in a number of critical areas of broadband assessment. Our work to date has identified technical and financial approaches to

expanding broadband availability, fostering greater digital inclusion, and promoting economic growth and innovation across the state.

We first analyzed the degree of need for State involvement and engagement in broadband. Based on our national experience, we evaluated Connecticut's standing relative to its competitor states, identified broadband gaps, and assessed incumbent plans for service and infrastructure expansion. CTC financial analysts evaluated the extent the State can improve competition in the middle mile by redirecting its existing telecommunications spending.

In addition, we evaluated the strengths and weaknesses of proposals submitted by potential private partners. Based on our analysis, our team developed a range of strategic options for the State and the municipalities in Connecticut. To support decision-making by the State and its localities, we developed a cost estimate for a statewide Gigabit fiber-to-the-premises (FTTP) network—primarily at a county-based level. We also prepared case studies of best practices among state-driven Gigabit initiatives.

Our report, "Broadband in Connecticut: Opportunities for the State and Localities to Enable World-Class Broadband," discussed the importance of ubiquitous, affordable high-speed Internet service and provided an overview of potential models for municipalities (including public, private, and P3).

Appendix A: Sample Staff Resumes

Joanne S. Hovis, Esq. | President and Director of Business Consulting

Joanne Hovis is an attorney and business planner with a two-decade background in communications and broadband. She is a nationally recognized authority on the broadband market and on the evolving role of public–private partnerships in the provision of communications services to the public.

Ms. Hovis leads the CTC team that advises the states of Connecticut, Kentucky, New Mexico, and New York; the cities of Atlanta, Boston, San Francisco, Seattle, and Washington, D.C.; and the statewide broadband networks in Colorado, Maryland, and Pennsylvania.

Ms. Hovis oversees all ongoing CTC research and analysis for local government clients and provides innovative business planning for communications networking initiatives such as San Francisco's planned fiber network and the interoperable public safety communications network in the National Capital Region. She also leads CTC's consulting on the federal E-Rate and Healthcare Connect Fund programs.

Ms. Hovis is CEO of the Coalition for Local Internet Choice (CLIC) and a former president of the National Association of Telecommunications Officers and Advisors (NATOA). She is a member of the boards of directors of the Benton Foundation and the Fiber to the Home Council.

Business Planning and Feasibility Analysis

Ms. Hovis leads all of CTC's business planning efforts. She has spearheaded projects that explore a range of business models by which government clients can leverage their existing assets to build, expand, and incentivize broadband expansion. She is sought nationwide as an expert in municipal ownership and operational broadband business models, fiber and wireless markets, and public–private partnerships. Among the projects she has led are:

- **City of Seattle**. Ms. Hovis advised the Mayor of Seattle regarding the U.S. communications market and business planning strategies for a citywide enterprise. She reported the public subsidies a network would require, and delivered a full assessment of opportunities and risks. The report included internal needs analysis, statistically significant market research, an assessment of competing services and technologies, and an evaluation of the business case and financial risks. Ms. Hovis led further analysis of the benefits of FTTP beyond the traditional balance sheet, including cost avoidance, monetary savings, and environmental impact. She led and facilitated a business planning working group comprised of the Mayor's senior staff, the directors of the city's two utilities (electric and water/sewer), and the city's CIO.
- Ms. Hovis advises the **State of New Mexico's Department of Information Technology** on broadband planning. She led a team of writers and analysts that produced a guidebook for New Mexico's local governments to guide them through the business, financial, and strategic planning necessary to implement city- or county-owned broadband networks.

The book-length guidebook offers specific instructions for localities to research and document the telecommunications infrastructure in their communities, and discusses strategies for exploring public–private partnerships for broadband expansion.

- Ms. Hovis is working with the **State of Kansas Department of Commerce** on a large-scale needs assessment of the state's network infrastructure. She is conducting major market surveys among three core sectors across the state (residents, businesses, and community anchor institutions) to evaluate the current uses and needs of broadband infrastructure. She is also developing a strategy for the evolution of Kan-ed, the state-created broadband program that serves schools, hospitals, libraries, and higher education institutions.
- Ms. Hovis has advised officials in the **District of Columbia** government on a range of telecommunications and fiber-optic projects for almost a decade. She worked with the Office of the Chief Technology Officer (OCTO) to create a business plan and strategy for building a municipal fiber-optic network with a wireless overlay in the least-served wards of the city**.** She performed a business case and technology analysis (including five-year projections) for DC-Net, a fiber-optic telecommunications network that provides voice and data services for the District of Columbia. She analyzed governmental, educational, and public safety uses of the network. The project tasks included asset mapping and network description; developing a cost comparison to leased/managed services; identifying opportunities to resell to other entities; identifying support mechanisms; and determining recommended business practices. She performs an ongoing role as strategic fiber adviser to the Chief Technology Officer and the Director of DC-Net, and supports planning for the network's future—including expanding the network to a broader array of end users.
- Ms. Hovis advises the **Urbana-Champaign Big Broadband (UC2B) Coalition (University of Illinois and the cities of Champaign and Urbana)** on a wide range of business and strategic planning issues. She is currently evaluating the private sector bids to build out last-mile fiber connections in the cities. She took a leading role in preparing UC2B's successful application for a federal Broadband Technology Opportunities Program (BTOP) stimulus grant to support its proposed FTTP network.
- Ms. Hovis provided extensive business planning, market assessment, and strategic planning for the **City and County of San Francisco**. Ms. Hovis served as a key adviser to the city's Chief Information Officer. She conducted an independent evaluation of the feasibility of San Francisco constructing and operating a municipal FTTP network to serve businesses and residences. As a first step toward the FTTP network, she worked with the City to plan a migration of the leased telecommunications services connecting 250 government facilities to a City middle-mile fiber-optic network; she also supported the city's application for BTOP funding. She reviewed cost and pricing factors associated with using leased telecommunications services and circuits provided by private vendors, as compared with migration to government-owned fiber optics. She projected the return on investment and total cost of ownership (including a wide range of costs from deployment to staffing to maintenance to financing to cutover expenses). She evaluated potential efficiencies to be realized through in-house rather than outsourced provision of services and circuits.
- Ms. Hovis led a feasibility study of the **City of Ocala, Florida's** fiber-optic enterprise. She

explored the potential range of business models and services that the city could implement to leverage its existing fiber-optic network and staff skill sets. She performed a competitive assessment of existing private sector broadband services and conducted market research with statistically significant surveys of the local commercial and residential sectors to assess current and future demand for high-speed connectivity. She proposed logical expansion strategies derived from in-depth analysis of financial costs, business models, and potential benefits to the community of multiple options.

- Ms. Hovis performed an expert assessment of the business and marketing plan for Utah's inter-jurisdictional network, **UTOPIA**. She led a strategy session with key stakeholders, collected relevant background material, performed an analysis of UTOPIA market research and marketing models, and independently evaluated UTOPIA's business plan. At the direction of UTOPIA leadership, her work focused on improving the participating UTOPIA communities' ongoing cash flow.
- Ms. Hovis devised a business strategy and wrote a business plan for **KINBER**, the BTOP-funded statewide backbone and middle-mile fiber infrastructure focused on the higher education and healthcare sectors in Pennsylvania. One highlight of the KINBER strategy was developing an actionable plan to increase early cash flow.
- Ms. Hovis developed a broadband feasibility study for **Garrett County, Maryland** with a specific focus on maximizing the benefits and use of the fiber backbone being built by the BTOP-funded One Maryland Broadband Network (OMBN) project.

Grant Planning & Management

Ms. Hovis' expertise includes the many funding opportunities available to local government broadband planners through the federal government and other sources. She has guided clients through the grant process, from application writing to fund management.

Ms. Hovis' grant work has included:

- Supporting more than a dozen clients in securing American Recovery and Reinvestment Act (ARRA) funds through the Broadband Technology Opportunities Program (BTOP). Successful applicants included including the $22.5 million Urbana-Champaign Big Broadband (UC2B) project, the $115 million One Maryland Broadband Network (OMBN), the $32.1 million OpenCape project in Cape Cod, and Washington, D.C.'s $17.5 million Community Access Network (DC-CAN).
- Securing additional National Telecommunications & Information Administration (NTIA) funds from the **Public Safety Interoperable Communications (PSIC)** grant program on behalf of public health and public safety communications projects in the National Capital Region (NCR), encompassing Washington, D.C. and almost two-dozen surrounding jurisdictions.
- Developing a successful application to the **Appalachian Regional Commission (ARC)**—a partnership among federal, state, and local government—for Garrett County, Maryland.
- Providing business case development and ongoing business planning support to significant **Urban Areas Security Initiative (UASI)** grant-funded projects in the NCR.
- Advising a number of clients on **Rural Utilities Service (RUS)** grant applications, and

reviewing business plans and projections that make use of RUS loan funds for entities such as UTOPIA, the regional non-profit open access fiber network in suburban and rural Utah.

Speaking and Advocacy

Ms. Hovis is in wide demand as a speaker and expert source on broadband deployment issues. She has testified before the U.S. Congress on matters of broadband deployment and policy; has been interviewed by publications including *Business Week*, the *Washington Post*, and the *Baltimore Sun*; and has been featured on the C-SPAN show "The Communicators."

She has provided expert presentations to the Federal Communications Commission, National League of Cities, Technology Policy Summit, the University of Illinois, Case Western Reserve University, the New America Foundation, and the Congressional Internet Caucus.

Ms. Hovis recently authored "Gigabit Communities: Technical Strategies for Facilitating Public or Private Broadband Construction in Your Community"—an independent report sponsored by Google and intended as a guide for local government leaders and planners.

EDUCATION

***Juris Doctor*, with honors**, University of Chicago Law School, 1994

- Patino Fellow, awarded for academic achievement and community service, 1991–94

Bachelor of Arts, with distinction, University of Wisconsin, Madison, 1990

PROFESSIONAL CERTIFICATIONS/LICENSES

Member of Illinois Bar Association, Member of District of Columbia Bar Association

ORGANIZATIONS

- Coalition for Local Internet Choice, CEO
- Benton Foundation, Director
- Fiber to the Home Council, Director
- United States Unified Community Anchor Network, Task Force on Community Anchor Network Economic Models, Charter Member
- National Association of Telecommunications Officers and Advisors, Past President

PRIOR TO COMING TO CTC IN 1997

1996–1997 Litigation/Communications Attorney, Mintz, Levin, Cohn, Ferris, Glovsky, & Popeo P.C., Washington, D.C.

1994–1996 Litigation Attorney, Jenner & Block, Chicago

Andrew Afflerbach, Ph.D., P.E. | CEO and Director of Engineering

Dr. Andrew Afflerbach specializes in planning, design, and implementation of communications infrastructure and networks. His expertise includes emerging fiber and wireless technologies and state-of-the-art networking applications.

As Director of Engineering, he oversees all engineering work performed by CTC Technology & Energy. He is a licensed Professional Engineer in the Commonwealth of Virginia and the states of Delaware, Maryland, and Illinois.

Dr. Afflerbach has planned and overseen implementation of a wide variety of government and public safety networks, including the infrastructure of state and metropolitan area governments. He prepared extensive technical analyses for submission to the Federal Communications Commission (FCC) and policymakers on national fiber expansion to underserved schools and libraries, on due diligence for the IP transition of the telecommunications infrastructure, and on potential technical frameworks for wireless network neutrality. He also recently served as a senior adviser to Crown Fibre Holdings, the public entity that is directing New Zealand's national fiber-to-the-home project.

Broadband Planning and Engineering

Dr. Afflerbach has architected, designed, and overseen implementation of numerous broadband networks for local and state governments, including those of Washington, D.C.; Crown Fibre Holdings (Government of New Zealand); San Francisco; the Commonwealth of Kentucky; the Delaware Department of Transportation; the Maryland Transportation Authority; St. Louis Park, Minnesota; and many large counties.

Advisory Services

Dr. Afflerbach advises a wide range of policy think tanks, U.S. federal agencies, and non-profits regarding the engineering issues underlying key communications issues. For example, he:

- Leads the technical team conducting FirstNet planning for the District of Columbia (Washington, D.C.).
- Serves as key technical advisor to the Commonwealth of Kentucky as it deploys it statewide Next Generation Kentucky Information Network.
- Provided expert testimony to the U.S. Federal Communications Commission (FCC) in the matter of the preparation of the national broadband plan as a representative of the National Association of Counties (NACo) and the National Association of Telecommunications Officers & Advisors (NATOA).
- Served as expert advisor regarding broadband deployment to the U.S. Conference of Mayors, NACo, National League of Cities, and NATOA in those organizations' filings before the FCC in the matter of determination of the deployment of a national, interoperable wireless network in the 700 MHz spectrum.
- In connection with the FCC's ongoing Open Internet proceeding, advised the New America

Foundation regarding the technical pathways by which "any device" and "any application" regimes could be achieved in the wireless broadband arena as they have been in the wireline area.

- Provided expert technical advice on the 700 MHz broadband and AWS-3 proceedings at the FCC for the Public Interest Spectrum Coalition (including Free Press, the New America Foundation, Consumers Union, and the Media Access Project).
- Prepared technical reports and analysis regarding fiber construction for submittal to the FCC, in connection with preparation of the National Broadband Plan, by NATOA, the City and County of San Francisco, and the Schools, Health, and Libraries Coalition.
- Served as technical advisor to the Naval Exchange in its evaluation of vendors' broadband communications services on U.S. Navy bases worldwide.
- Advised the U.S. Internal Revenue Service regarding the history of broadband and cable deployment and related technical issues in that agency's evaluation of appropriate regulations for those industries.
- Advised, during the height of the broadband "open access" debate, a variety of public interest associations and communities, including the City of Los Angeles and Stanford University, regarding the technical means by which cable networks could be opened to competition.
- Advised the Stanford Law School Center for Internet and Society on the technical issues for their briefs in the *Brand X* Supreme Court appeal regarding cable broadband.
- Provided technical advice to numerous non-profits, associations, and agencies as diverse as the Center for Internet and Society at Stanford Law School; the Internal Revenue Service, the Alliance for Community Media, the William Penn Foundation, the Center for Digital Democracy, and the FCC's Local and State Government Advisory Board (LSGAC).
- Has been invited to speak about communications technologies before such organizations as the Public Technology Institute, American Association of Community Colleges, ICMA, ILCMA, and the Practicing Law Institute.
- Developed curricula for a variety of organizations, including the University of Maryland, the United States Department of Transportation, and the George Washington University.
- Has taught courses and delivered seminars regarding communications for numerous educational and government institutions.

Public Safety Network Interoperability and Interconnection

Dr. Afflerbach served as lead engineer and technical architect for planning and development of NCRnet, a regional fiber-optic and microwave network that links public safety and emergency support users throughout the 19 jurisdictions of the National Capital Region (Washington, D.C. and surrounding jurisdictions), under a grant from the U.S. Department for Homeland Security's Urban Areas Safety Initiative. He wrote the initial feasibility studies that led to this project for regional network interconnection.

Smart Grid

Dr. Afflerbach and the CTC team provided expert testimony and advisory services to the Public Service Commission of Maryland regarding Advanced Metering Infrastructure (AMI). CTC

provided objective guidance to the staff as it evaluated AMI applications submitted by three of the state's investor-owned utilities (IOUs). This contract represented the first time the PSC staff had asked a consultant to advise them on technology—a reflection of the lack of standards in the Smart Grid arena, and the magnitude of the investment that the utilities were proposing.

Instruction/Expertise

Dr. Afflerbach has served as an instructor for the U.S. Federal Highway Association/National Highway Institute, the George Washington University Continuing Education Program, the University of Maryland Instructional TV Program, ITS America, Law Seminars International, and the COMNET Exposition.

He teaches and helped develop an online graduate-level course for the University of Maryland. He developed and taught communications courses and curricula for ITS America, COMNET, and University of Maryland. His analysis of cable open access is used in the curriculum of the International Training Program on Utility Regulation and Strategy at the University of Florida.

Dr. Afflerbach has also prepared client tutorials and presented papers on emerging telecommunications technology to the National Fire Protection Association (NFPA), NATOA, the National League of Cities (NLC), the International City/County Management Association (ICMA), and the American Association of Community Colleges (AACC). He also taught college-level astrophysics at the University of Wisconsin.

EMPLOYMENT HISTORY

1995–Present	CEO/Director of Engineering, CTC
	Previous positions at CTC: Principal Engineer, Senior Scientist
1990–1996	Astronomer/Instructor/Researcher
	University of Wisconsin–Madison, NASA, and Swarthmore College

EDUCATION

Ph.D., Astronomy, University of Wisconsin–Madison, 1996
Master of Science, Astronomy, University of Wisconsin–Madison, 1993
Bachelor of Arts, Physics, Swarthmore College, 1991

PROFESSIONAL CERTIFICATIONS/LICENSES

Professional Engineer, Commonwealth of Virginia and states of Delaware, Maryland, and Illinois

HONORS/ORGANIZATIONS

- Association of Public-Safety Communications Officials (APCO)
- Board of Visitors, University of Wisconsin Department of Astronomy
- National Association of Telecommunications Officers and Advisors (NATOA) Technology and Public Safety Committees
- Armed Forces Communications and Electronics Association (AFCEA)
- Society of Cable and Telecommunications Engineers (SCTE)
- Institute of Electrical and Electronic Engineers (IEEE)

- Charleston Defense Contractors Association (CDCA)
- NASA Graduate Fellow, 1993–1996. Research fellowship in astrophysics
- Elected Member, Sigma Xi Scientific Research Honor Society
- Eugene M. Lang Scholar, 1987–1991, Swarthmore College

SELECTED PUBLICATIONS, PRESENTATIONS, and COURSES

- "Mobile Broadband Networks Can Manage Congestion While Abiding By Open Internet Principles," prepared for the New America Foundation's Open Technology Institute – Wireless Future Project, November 2014.
- "The State of the Art and Evolution of Cable Television and Broadband Technology," prepared for Public Knowledge, November 2014.
- "A Model for Understanding the Cost to Connect Schools and Libraries with Fiber Optics," prepared for the Schools, Health & Libraries Broadband Coalition, October 2014.
- "The Art of the Possible: An Overview of Public Broadband Options," prepared jointly with the New America Foundation's Open Technology Institute, May 2014.
- "Understanding Broadband Performance Factors," with Tom Asp, Broadband Communities magazine, March/April 2014.
- "A Brief Assessment of Engineering Issues Related to Trial Testing for IP Transition," prepared for Public Knowledge and sent to the FCC as part of its proceedings on Advancing Technology Transitions While Protecting Network Values, January 2014
- "Gigabit Communities: Technical Strategies for Facilitating Public or Private Broadband Construction in Your Community," prepared as a guide for local government leaders and planners (sponsored by Google), January 2014
- "Critical Partners in Data Driven Science: Homeland Security and Public Safety," submitted to the *Workshop on Advanced Regional & State Networks (ARNs): Envisioning the Future as Critical Partners in Data-Driven Science*, Internet2 workshop chaired by Mark Johnson, CTO of MCNC, Washington, D.C., April 2013
- "Connected Communities: How a City Can Plan and Implement Public Safety & Public Wireless," submitted to the International Wireless Communications Exposition, Las Vegas, Nevada, March 2013
- "Cost Estimate for Building Fiber Optics to Key Anchor Institutions," prepared for submittal to the FCC by the National Association of Telecommunications Officers and Advisors and the Schools, Health, and Libraries Coalition, September 2009.
- "Efficiencies Available Through Simultaneous Construction and Co-location of Communications Conduit and Fiber," prepared for submittal to the FCC by the National Association of Telecommunications Officers and Advisors and the City and County of San Francisco, 2009, referenced in the National Broadband Plan.
- "How the National Capital Region Built a 21st Century Regional Communications Network" and "Why City and County Communications are at Risk," invited presentation at the FCC's National Broadband Plan workshop, August 25, 2009.
- "Existing and Emerging Broadband Technologies," NATOA Conference, October 2007.
- "An Assessment of the Technical Capabilities of the AWS-3 Spectrum," expert report

prepared for Free Press, December 2007.

- "An Engineering Assessment of Select Technical Issues Raised in the 700 MHz Proceeding," expert report prepared for FCC filing for Free Press and Media Access Project (Public Interest Spectrum Coalition), May 2007.
- "Understanding FiOS and U-Verse Architecture," presented at NATOA's Policy and Legal Conference, Washington, D.C., spring 2007.
- "Fiber to the Premises and Fiber to the Node," Journal of Municipal Telecommunications Policy, Fall 2006.
- "Communications Infrastructure Primer," presented to the National Fire Protection Association, Miami Beach, FL, 2006.
- Supplemental Report, "Technological Analysis of Open Access and Cable Systems," http://www.aclu.org/Privacy/Privacy.cfm?ID=17507, prepared for American Civil Liberties Union and Stanford Law School Center for Internet and Society, 2005.
- *Affordable Telecommunication Networks for Local Government*, International City/County Management Association, November 2004.
- "Telecommunications and ITS: What You Need To Know," prepared curriculum for two-day training course for the University of Maryland, 2001.
- "Technological Analysis of Open Access and Cable Systems," prepared for ACLU, 2001.
- "No Pipes: Wireless Broadband," Journal of Municipal Telecommunications Policy, 2001.
- "Interactive PEG: Technical Strategy for Implementation," Community Media Review, 2000.
- "Telecommunications and Intelligent Transportation Services," two-day training course, presented in multiple cities for the US Department of Transportation/ITS America, 1999.
- "Building Integrated Voice, Data, and Video Networks for the Local and Wide Area," two-day training course, presented for the University of Maryland, 1999.
- "Integrated Data, Video & Voice Broadband Networks," week-long training course, presented at the COMNET Exposition, Washington, DC, and January, 1999.
- "LANs: Design and Installation of Networks that Support Voice, Data, and Video Applications," multi-day training course, presented for the George Washington University Continuing Engineering Education Program, 1996; 1997; 1998; 1999.
- *Cable Network Technology: A Primer for Local Officials*, International City/County Management Association, September 1998.
- "I-Nets and the Internet," Infotech Report, August 1998.
- "Integrated Data, Video & Voice Broadband Networks" and "Design & Implementation of Metropolitan Area Networks (MANs)," presented at the 1998 COMNET Exposition.

Thomas J. Asp, BSEE, MBA | Principal Engineer and Analyst

Mr. Asp specializes in evaluating connectivity (voice, video, and data) options and recommending effective solutions for clients throughout the United States. He holds more than 25 years of experience as an engineer and analyst in communications and public power systems. His experience includes electric and telecommunication system design, network feasibility, evaluation of the financial impact of projects on operations, and provision of expert testimony.

Mr. Asp is recognized as an expert in evaluating and offering recommendations regarding municipal broadband communications systems. He has been actively involved with telecommunication market research and feasibility analysis for over a decade, both with CTC and previously as a partner at the public accounting firm of Virchow Krause (Baker Tilley). Mr. Asp also has significant experience in the communications industry working in the areas of cellular, cable TV, broadband, and mobile radio, including as a product manager in the Cellular Mobile Telephone, Automatic Meter Reading, and Distribution Automation industries.

Broadband Networks (Wired and Wireless)

Mr. Asp is regarded as one of the premiere analysts in the United States regarding municipal planning and deployment of broadband systems to meet economic development, digital inclusion, and other needs. He has assisted numerous local governments, municipal utilities, and municipal consortia to evaluate their communities' communications needs and determine the financial parameters and business case for meeting those needs.

In this area, Mr. Asp's experience includes preparing connectivity feasibility studies for municipal networks, including economic analysis, market assessment, technology review, vendor analysis, and business plan development. He has assisted numerous communities with evaluating the feasibility of advanced connectivity services alternatives including provider partnerships and city-owned networks. He has reviewed options under cable franchise agreement for municipal purchase and operation. Mr. Asp has reviewed offerings and operations of incumbent telecommunications providers and assisted in negotiations with incumbent telecommunications providers to enhance availability of existing services and to encourage new and innovative offerings.

Some select examples of his projects include:

- Provided Jackson (Tennessee) Energy Authority an independent evaluation of responses to JEA's 2010 request for proposals (RFP) soliciting vendors to provide wholesale voice services. With JEA staff input, he developed the evaluation system and scoring matrix to ensure a balanced approach that best met JEA's needs. Responses were evaluated on the basis of strategic fit, operational fit, reliability, and overall cost; recommended two respondents as finalists for further consideration by JEA; and assisted JEA in negotiating with those finalists. As a final step in the process, CTC presented to JEA management a written report recommending the "best-fit" vendor.

- Completed a business and technology plan for Los Angeles Department of Water and Power (LADWP) to determine the feasibility of expanding the connectivity services offered to the businesses and institutions over the Department's fiber network. Included in the analysis was a valuation of additional fiber routes that LADWP acquired from the City of Los Angeles.
- Served as a business consultant to the City and County of San Francisco. Investigated the feasibility of the city building and operating a fiber-to-the-premises (FTTP) network to every home and business in San Francisco. The project included an analysis of multiple business models and business recommendations customized for San Francisco's unique circumstances.
- Developed a business case analysis for DC-Net, a District-owned and operated fiber optic telecommunications network that provides voice and data services. The network consists of resilient, interconnected fiber optic rings that connect more than 400 government buildings in the District, including Police Department, Emergency Management Agency, and Fire Department radio towers.
- Conducted a feasibility study, a business case analysis, and an "off-the-balance-sheet" benefits analysis for a fiber-optic network proposed by the mayor of the City of Seattle. The first study, FTTP Municipal Broadband Risks and Benefits Evaluation, sponsored by Seattle City Light, included the following elements:
    - Internal needs analysis
    - Market research of both residential and business
    - Assessment of competing services and technologies
    - Evaluation of the business case and business risks

  Following on that report, Mr. Asp researched and wrote an FTTP Benefits Evaluation for the City, which explored the benefits of FTTP beyond the traditional balance sheet, including cost avoidance, monetary savings, and environmental impact.
- Performed an expert assessment of a business and marketing plan for Utah Telecommunication Open Infrastructure Agencies (UTOPIA's) open access FTTP network. The project included a strategy session with key stakeholders, collection of relevant background material, an analysis of UTOPIA market research and marketing models, and an independent evaluation of UTOPIA's business plan. Mr. Asp's work focused on improving the participating UTOPIA communities' ongoing cash flow and increasing participation of households and businesses in those communities.
- Prepared a fiber optic business plan for Richland Utilities, Washington to meet the needs of city facilities, the electric utility, schools, hospitals, banks, and other institutions. Work included preparation of various business models, review of operational requirements, and preparation of pro-forma financial statements.
- Provided extensive business planning assistance to the State of Maryland's One Maryland program, which lead to build an interconnected fiber-optic broadband network that reaches every county and city in Maryland and will provide backbone and middle-mile capacity for commercial carriers.
- Managed project assisting Bountiful City, UT with the development of a business plan for a citywide wireless network. This project included the review of a conceptual design,

reviewing proposed business relationships and staffing, and conducting a cost-benefit analysis.

- Project manager in assisting Ames, IA with the review of existing architecture, development of a network design, and preparation of detailed cost estimates for the acquisition and installation of WiFi hot spots and supporting infrastructure. This project has now moved into implementation preparations.
- Led consulting team in investigating several WiFi deployment models, development of a business plan (including market research and financial analysis), and development of a partnership RFP for St. Louis Park, MN. Mr. Asp assisted the city to pilot the network and then prepared specifications and bid documents to identify both integrators and operators for the network.
- Assisted the City of Tucson, AZ with a wireless feasibility study that included market research, competitive industry assessment, internal and external needs assessments, financial analysis, and the development of a business plan.
- Assistance in the implementation of an Institutional Fiber Network (I-Net) for Norwich Public Utilities in Norwich, CT. Project included development of a plan and strategy for the Fiber Optic Enterprise.

DA, AMR, SCADA

In the areas of Distribution Automation (DA), Supervisory Control and Data Acquisition (SCADA), mobile radio, and Advanced Metering Infrastructure (AMI), Mr. Asp has assisted municipal utilities and public power cooperatives with extensive evaluative and design services. Specifically, he has prepared evaluations and submitted recommendations on AMI alternatives and benefits. He has assessed existing and evolving technologies and services to support AMI and DA for electric utilities and has developed and directed demonstration plans to test technologies to support distribution automation -- including providing recommendations for establishing vendor alliances, performing research and designs networks to combine multi-utility communications, and outlining, evaluating, and recommending communication requirements and options for electric utility DA, SCADA, mobile radio, and AMI.

TESTIMONY & VALUATION

In addition to assisting over 80 communities and counties in evaluating financial opportunities to provide voice, data, and video services, Mr. Asp has provided financial and technical testimony and expert advice. Some examples include:

- Conducted an exhaustive business case analysis and prepared expert witness testimony on behalf of the City of Alameda in a federal court case involving the business practices, business results, and ultimate sale of its fiber optic enterprise. The testimony included a comparative analysis of business models employed by municipal fiber networks nationwide and a review and valuation of several recent cable business transactions.
- Maryland Public Service Commission regarding Baltimore Gas & Electric's application for deployment of AMI and smart grid technologies. Written and sworn testimony included an analysis of smart grid technologies, vendor development, and impact to rates.

- Pacific Gas & Electric regarding the financial and technical viability of the use of Broadband over Power line (BPL) for Automatic Meter Reading (AMR) and support of new business opportunities. Mr. Asp prepared a report in anticipation of being called to testify before the California PUC
- The City of Lebanon, OH in connection with a dispute over an Assessment of Infrastructure Connectivity Fee with home-builders and Time Warner Cable. The Assessment and disposition regarded the reasonableness of the connection fee assessed to each new home by the municipal telecom department
- The City of Marshal, MO in determination of the value of the incumbent cable television system owned and operated by Time Warner.

EDUCATION
Bachelor of Science, Electrical Engineering, North Dakota State University, 1979
Master of Business Administration, University of St. Thomas, St. Paul, 1989

Matthew DeHaven | Principal Fiber Engineer

Matthew DeHaven specializes in wired and wireless communications and broadband telecommunications technology for public safety and other local government and institutional needs. He has over 13 years of extensive engineering experience designing, developing, installing, and overseeing integration of local and wide area networks for institutional, public safety, and Intelligent Transportation System (ITS) applications, video-networking solutions, and unified communications systems.

Mr. DeHaven has experience at many levels of network design, procurement, and implementation for high-capacity metropolitan-area networks to support converged video, voice, and data communications. He leads network designs and the preparation of specifications for competitive bid processes, serves as project manager overseeing implementation and testing for a wide range of government clients. Mr. DeHaven prepares designs and cost models to support decision-makers in the deployment of a range of data network technologies, traditional telephone systems, voice-over-IP (VoIP) networks, one-way video distribution, and two-way videoconferencing. His data network experience includes work with SONET, Ethernet, and ATM networks using a range of fiber optic, copper, and wireless technologies. He serves as CTC's lead engineer on numerous wide area network projects.

Among many other projects, he served as a one of the primary technical architects for the 19 jurisdiction fiber optic/microwave network currently deployed in the National Capital Region (NCRnet) to support public safety interoperable communications.

Inter-County Broadband Network

Originally serving as part of the grant application development team that successfully led the State of Maryland to a $115 million Broadband Technology Opportunities Program (BTOP) administered by the National Telecommunications and Information Administration (NTIA), Mr. DeHaven currently serves as the Portfolio Manager for the One Maryland Inter-County Broadband Network BTOP grant project.

The ICBN is a nine-jurisdiction consortium in central Maryland led by Howard County, Maryland, and is a key sub-recipient of the State's grant award. Mr. DeHaven is the lead technical consultant overseeing the use of approximately $72 million in grant funds to build over 800 miles of fiber optics and directly connect approximately 650 community anchor institutions, including schools, libraries, government buildings, community colleges, and public safety agencies. Mr. DeHaven is tasked with overseeing numerous engineering and construction contractors, as well as playing a key role in overall network design during this aggressive three-year endeavor that began in late 2010.

Wireless Communications

Mr. DeHaven assesses clients' existing and projected wireless broadband needs and recommends potential strategies for using new technologies to enhance and improve network operations and services. Some select examples of his ongoing and past projects include:

- Engineering support of the ongoing deployment of a citywide 4.9 GHz public safety radio mesh network for the City of Port Angeles, WA. CTC conducted a needs assessment of the city's network and reviewed public safety mobile data communications considerations, which led to the development of network specifications and overseeing the procurement for the expansion of the city's fiber network and a citywide wireless network serving both public safety and public access needs.
- Provided an updated assessment and review to Cincinnati, OH of the city's current networks and recommended updates to the long-term strategic plan originally prepared in 2004. This project involves assessing and identifying new department and network application needs, assessing the current networks to meet identified needs, assessing emerging fiber and wireless technologies, recommending wireless strategies, and providing recommendations and strategies for meeting foreseeable needs.
- Developed a strategic plan for a wireless data network to meet public safety and local government needs in Seattle, WA. CTC previously conducted a feasibility study that identified these needs.
- Design of a broadband wireless network for Annapolis, MD that provides connectivity for a citywide video surveillance system. The network was designed to provide high-degrees of security and has substantial reserve capacity to support the addition of new video requirements, expand toll-quality IP-based voice and data services, and, potentially, provide backhaul for a future mobile wireless solution.
- Oversight of the design and implementation of a "wireless downtown" for Skokie, IL to enhance economic development and Internet accessibility for residents and visitors.
- Project oversight in developing an infrastructure plan to support the implementation of WiFi services throughout a downtown area targeted for economic development in Rockville, MD. The plan focuses on deploying a flexible architecture of physical support infrastructure to enable a wide range of wireless connectivity options for visitors, residents, and business tenants while maintaining the aesthetics of the development.
- Evaluation of bids from wireless service providers who responded to the city of Mesa, AZ's RFP. CTC also, in an earlier phase of the project, provided an assessment of WiFi technology and potential expansion of the fiber-optic infrastructure via mass wireless communications—potentially for an intelligent transportation system application and for free Internet access for citizens.
- Research on current and future wireless technologies and evaluation of the feasibility of implementing a secure public safety wireless network in Prince George's County, MD. Designed and implemented a pilot project to test the feasibility of a public safety network. A successful solution was deployed to enable Mobile Data Computers in emergency response vehicles to securely roam from a carrier CDMA network to private, County-operated WiFi hotspots.

Public Safety Networking

In addition to supporting the design and deployment of NCRnet, Mr. DeHaven is the lead engineer responsible for one of the key applications leveraging this regional network. Mr. DeHaven is responsible for the design, implementation, and ongoing operations of a regional videoconferencing network supporting Emergency Management among the 21 jurisdictions in the National Capital Region (DC, MD, VA). CTC developed the systems' designs and oversaw implementation under a grant from the Department of Homeland Security Urban Areas Security Initiative (UASI). This network now serves thousands of end users, integrated tightly with the ever growing videoconferencing and VoIP systems leveraged by these jurisdictions.

In Anne Arundel County, MD, Mr. DeHaven assisted with the deployment of traffic surveillance cameras. He provided analysis of candidate technical solutions for cameras using the County's high-speed fiber-optic I-Net to transport video and control signals, developed system specifications, and oversaw the implementation of the County's video surveillance capabilities.

Mr. DeHaven was also involved in the planning and implementation of a statewide network in Delaware for the purpose of providing traffic information and traffic control capabilities to transportation management facilities. Such a network allows remote control of traffic signal systems and variable message displays, while providing real-time traffic surveillance in the form of video images and microwave sensor data. He has developed expertise in the numerous forms of technology used in this type of project, ranging from fiber optics to wireless digital spread-spectrum communications.

Mr. DeHaven serves as CTC's lead engineer for the Delaware Department of Transportation's Advanced Traffic Advisory Radio System, the first Advanced TARS system in the country. In that capacity, he is responsible for training and advising on-site staff, specifying and installing new equipment, and monitoring performance of the system.

Video and Broadcast Communications Engineering

Mr. DeHaven's experience includes the management, design, and procurement of video, voice, and data networks. Some select examples of his recent project work include:

- Analysis of the technical options to allow The Rockville Channel (Rockville, MD) to support live cablecasting from multiple facilities, including the implementation of an IP-based video and audio transmission system. He also managed the relocation of the master control and studio production systems for The Rockville Channel. CTC successfully executed the relocation during the tight window of opportunity between live production events, while making enhancements to system layout and cabling infrastructure and keeping the channel "on-air" during the process.
- Development and implementation of videoconferencing and teleconferencing tools for the 21 jurisdictions in the National Capital Region (DC, MD, VA) Emergency Operations Centers (EOCs) and Emergency Communications Centers (ECCs) over a state-of-the-art fiber-optic and microwave network.
- Preparation of system-level design recommendations and cost estimates for an extensive, countywide system to support interactive and on-demand video training communications

for the Anne Arundel (MD) County Fire Department. CTC also developed the design for a video display system for the Fire Department's new dispatch center, intended to allow key sources of information to be prominently displayed throughout the facility.

- Preparation of system-level design recommendations and cost estimates for an extensive, citywide system to support interactive and on-demand video communications for training, emergency collaboration, and routine meetings between Mesa, AZ Fire Department personnel. CTC also integrated a pilot videoconferencing system to demonstrate certain capabilities of the system design.
- Development of a videoconferencing system for homeland security applications on behalf of Arlington County, VA—the site of the September 11, 2001 Pentagon attack. The system links numerous public safety and other government users and aims to ensure uninterrupted emergency communications in the event of a terrorist attack or natural disaster.

Instruction/Expertise

Mr. DeHaven led the CTC research team in preparing Web-based Intelligent Transportation System (ITS)-Communications courses on behalf of the University of Maryland Center for Advanced Transportation Technology. He has served as an online instructor for these courses for more than six years.

EDUCATION

Bachelor of Science, Electrical Engineering**,** in progress, The Johns Hopkins University

SELECTED PUBLICATIONS and COURSES

- "What's the Fuss About Fiber? A Comparative Analysis of Fiber and Copper Physical Media," Journal of Municipal Telecommunications Policy, Spring 2009.
- "Deploying Public Safety Networks: Costs and Benefits – 4.9 GHz for Video Surveillance," presented at annual SEATOA Conference, April 2008.
- "Busting the Technology Myths," presented at NATOA Conference, October 2007.
- "WiFi and Beyond: Taming Technology for your Community," presented at the annual TATOA Conference, August 2007.
- "Looking Beyond Traditional I-Nets: NSCC Case Study," presented at the annual TATOA Conference, August 2007.
- "Magical Solutions for Public Safety Wireless," presented to the National Association of Telecommunications Officers and Advisors, September 2006.
- "VoIP and Enhanced 911 Services: A Primer on the Technology and its Limitations," Journal of Municipal Telecommunications Policy, Fall 2005.
- "IP Technologies: An Overview for Local Government," presented at the annual NATOA Conference, September 2005.
- "Homeland Security Applications Over the I-Net," NATOA Conference, 2002.

Brian D. Proffit | Principal Analyst

Mr. Proffit leverages his industry relationships and experience to coordinate efforts to engage carriers as partners in public bandwidth infrastructure projects. He uses his knowledge of the industry to support CTC's public sector clients in analyzing carrier activity, conducting outreach to carriers, and planning and developing public–private partnerships.

A 15-year veteran of the telecommunications industry, Mr. Proffit uses well-honed entrepreneurial, management, technical, sales, and business development skills; leading to increased penetration, development, and collaboration within the Public Sector, Higher Education, State, Local Government Community. Mr. Proffit has demonstrated his acumen as a business executive through extensive sales, marketing, strategic planning, project management, and operations by:

- Leading public-private partnership engagements with state and local government
- Developing extensive relationships with Internet2, the federal research communities and the regional research and education networks, leading to Zayo's successful partnership in numerous BTOP projects as part of the ARRA initiative
- Leading complex solution development efforts
- Providing executive leadership guidance and national policy response to FCC within public sector vertical
- Founding, managing, and operating a company serving Fortune 1000, enterprise, and government accounts
- As a contracted consultant, serving as Director of Business Development, Marketing, and Sales, building strategic business alliances, marketing plans, proposal guidelines and templates, and redefining offering portfolio for future sales success
- Leveraging extensive knowledge of strategic sales process, forecasting, and sales life-cycle management

<u>Innovative Leadership</u>

- Joined Zayo as a start-up and built successful higher education and federal research verticals
- Developed a staff of salespeople, engineers, and administration for Profitable Solutions
- Led stimulus team's direct business development efforts under ARRA program
- Mentored Major Accounts Team of national telecommunications provider

<u>Effective Communication</u>

- Wrote responses to the FCC and NTIA in matters of E-Rate Modernization, FirstNet, and broadband policy
- Able to facilitate processes among C-level managers and engineers

- Delivered informational, motivational, sales, technical, organizational, and financial presentations to executives, decision makers, political, and community leaders

Practical Visionary

- Able to create a vision for strategic account planning by evaluating a business based on customer's goals, initiatives, resources and through knowledge of industry trends
- Proficient at focusing customers towards the impact of the strategic vision, while orchestrating the opportunity to close

Organizational Skills

- Manage vertical efforts nationally supporting 35 account managers in complex engagements and executive relationships
- Managed weekly sales, IWO, production meetings, and house accounts
- Developed Application Engineering sales process for Strategic Accounts
- Oversaw sales, acquisition, reengineering, and design of specialty equipment
- Created prospect management, and forecasting systems

Technical Expertise

Consulting: Network infrastructure, public–private partnership for broadband, security, DR, regulatory compliance, strategic planning, and organizational and corporate business development

IT: IT Infrastructure, and network architecture, security, compliance, policy, and strategy, WAN, and SAN Environments, DR

Telecom: DWDM, Ethernet, MPLS, IP, Cloud, collocation, video transport

Wireless: Distributed antenna systems, LMDS & truncated systems, SCADA & CDPD, 3G/4G deployment

PRIOR TO JOINING CTC IN 2015

2008 – 2015 **Zayo Bandwidth**, Boulder, CO

Strategic Overlay Director, Major Account Director

- Selected to lead Business Development Efforts for Stimulus Related Projects under the ARRA of 2009

2005 – 2008 **Level 3 Communications (TelCove)**, Allentown, PA

Account Director, Sr. Major Accounts Manager

- Planned and executed sales strategy to recast non-producing region of the Lehigh Valley, personally generating greater than 14.78% of total Level 3's (TelCove) PA Business Market Divisions new revenue for 2006, and grew assigned base by 74% (Presidents Club)
- Participated in Strategic Acquisition of LVAIC Consortium of High Education Members, and coordinating response, and account management of BFTP for "Wall Street West."

2004 – 2005 **Royal Truck and Equipment, Inc.**, Coopersburg, PA

Director of Purchasing and Business Development, (Wholesale and Equipment Manager)

- Brought in to help the President establish a successful wholesale and equipment division; overhaul transportation department; and reestablish strategic buying relationships with national partners, government entities, and DOD
- Developed marketing strategies and increased revenue by 15% in the first quarter of 2004
- Implemented a safety and response program to meet OSHA guidelines

2004 **Trigon Technology Group, LLC. (A GR Group Company)**, Jenkintown, PA

Director of Business Development, Marketing, and Sales (Contractor)

- Contracted to develop marketing and sales strategy for technology consulting practice delivering Global 50 experience to the mid-market enterprise, specializing in network architecture, performance management, IT security, and compliance, and strategic IT staffing.
- Developed marketing strategy, and materials including web, print, and electronic media.
- Successfully developed partner alliances to strengthen product portfolio while building a $3 million sales pipeline in 90 days

2001 – 2003 **XO Communications**, Conshohocken, PA

Major and Senior Account Executive

- Hired as MAE for Philadelphia metro of large CLEC and ISP
- Worked with IVR, fixed wireless, intrusion detection, disaster recovery, managed hosting, Ethernet, local and LD internet access, firewall management, etc.

2000 – 2001 **RCN Corporation**, Bethlehem, PA

Senior Strategic Account Manager/Associate Application Engineer

- Sold complex unified communications solutions to various corporations, educational, and government organizations
- Facilitated the RFP process and worked with internal staff from legal, engineering, operations, and financing to complete projects for Guardian Life, Bear Sterns, Harvard, New School University, George Washington University, and county and city governments

1995 – 2000 **Profitable Solutions, Inc.**, Doylestown, PA

President

- Founded and ran sales, design, and engineering firm within the wireless and mobile data communications industry. Secured accounts with United Airlines, US Air, Philadelphia Fire Department, Kvaerner, US Postal Service, etc. Completed aggressive three-year business plan within the first year

1994 – 1996 **Royal Truck and Equipment, Inc.**, Coopersburg, PA

Purchasing and Sales Manager

- Ran sales, marketing, and financing operations for large commercial vehicle dealer
- Increased sales 45% and reduced project completion time by 20%

Marc Schulhof | Senior Analyst and Technical Writer

Marc Schulhof has more than 20 years of experience in technical writing, financial journalism, and public and corporate communications. Marc's excellent editorial skills and his extensive experience with analyzing IT and business topics have enabled him to play an integral role in supporting a range of research and writing projects, including:

- Master plans (business and engineering)
- Needs assessments
- Feasibility studies
- Survey instruments
- Expert witness testimony
- Federal grant applications
- Requests for proposal
- Cellular tower siting reports
- Letters, press releases, and website content

Prior to joining CTC, Marc was the worldwide editor-in-chief of CIO program websites at IBM, where he established editorial direction for 36 country-specific CIO websites and worked with local editors to update each site's mix of multimedia content. He also wrote and edited feature articles and white papers on information technology and business topics.

Marc's experience also includes his role as a global editor at PricewaterhouseCoopers Consulting, where he wrote and edited reports on a variety of technology and business topics, and served as editor of the PwC-sponsored *BusinessWeek Online Handheld Edition* daily news summary for mobile device users. As an associate editor at *Kiplinger's Personal Finance Magazine,* he researched, analyzed, and wrote about a range of complex financial issues.

EDUCATION
Bachelor of Science, Journalism, Northwestern University
Master of Science, Journalism, Northwestern University

Eric Wirth | Senior Project Engineer

Eric Wirth has more than 10 years of communications engineering experience; he specializes in evaluating broadband (video, voice, and data) telecommunications networks, analyzing emerging broadband technologies, and designing broadband networks for institutional uses. In addition, Mr. Wirth is conducting extensive and ongoing research on applications for Internet Protocol (IP) technology, including video-over-IP (VoIP) for video transmission over wide area networks, video conferencing, and other communication applications for wide area networks.

Utility and Public Safety Fiber Optic Networking

Mr. Wirth's experience includes the design and implementation of a variety of fiber optic communications network. Some select examples of his work include:

- Developing a fiber optic network to connect a variety of sites for the **City of Atlanta**. The network will connect traffic signals, police cameras, and City facilities. The City is also looking to expand the network to support other government partners. Mr. Wirth is developing a network design to support both new fiber optic routes and to utilize existing fiber routes where fiber optic strands are limited.
- Design and pricing of fiber optic cable, electronics, and overall architecture of a survivable emergency communications system for **Tennessee Valley Public Power Association** (TVPPA) distributors. The design included MPLS and DWDM technology, and leveraged TVPPA and distributor fiber.
- Design and implementation of a fiber optic network for **Norwich (Connecticut) Public Utilities**. The project consisted of developing detailed fiber optic route design and cost estimates, network electronic design and cost estimates (including SCADA transportation), and a request for proposals (RFP) for Norwich's use in selecting a contractor to complete the installation. In addition to serving the utility's needs, the fiber optic network was designed to serve city, schools, and hospital users.
- Fiber optic network and electronics design, and RFP development, for the **City of Dover, Delaware Electric Department**. Mr. Wirth developed a fiber optic network design to provide additional redundancy and functionality for the existing city fiber optic network. In addition, he developed a network electronics design to leverage the new fiber optic communications links to increase the reliability of the city's network.
- Fiber-to-the-premises high-level design and cost estimate for the **Lexington-Fayette Urban County Government in Kentucky**. Mr. Wirth developed a fiber optic and network electronics design to serve the entire city of Lexington and provide the City with a cost estimate to use in negotiations with a network service provider.
- Fiber optic network design and feasibility analysis for the **City of Palo Alto, California**. The City is examining several fiber optic construction projects to expand its existing fiber optic

network to meet the needs of the city, the municipal electric utility, and surrounding school districts, and to increase the footprint of its commercial fiber optic network.

- Fiber optic network design, RFP development, and construction oversight for **Leisure World of Maryland**. Mr. Wirth developed a fiber optic network and electronics design to connect all of the Leisure World facilities to allow the consolidation of Leisure World's data and voice networks. After developing a design and cost estimate, Mr. Wirth wrote an RFP for fiber construction, helped choose a fiber optic construction contractor, and oversaw the fiber optic construction.

Wireless Communications

Mr. Wirth has extensive experience working on numerous wireless networking projects, from analysis and feasibility to design and implementation. These networks range in scope from small hot spots to area-wide and regional networks. Some representative examples of his projects include:

- Designing and overseeing the implementation of a citywide broadband wireless network project that will provide integrated communications and interoperability among all local public safety entities in the **City of Port Angeles, Washington**. The high-capacity 4.9 GHz broadband wireless network provides public safety staff in the field with full and timely access to state, federal, and GIS databases, and will allow EMS responders to access medical databases and support on-site telemetry of patient status. A commercial "open access" multi-provider wireless access system was deployed as a public–private partnership with a local Internet service provider (ISP); it provides citywide WiFi services in the 2.4 GHz band. The city and the local ISP partner have developed a subscription package that is attractive to a wide range of commercial, residential, and public sector users.
- Designing a cost-effective broadband wireless network for the **City of Annapolis, Maryland**. This network serves as a backbone to provide connectivity for a video surveillance system throughout downtown Annapolis. The network has the capacity to meet all current needs, provide 99.999 percent availability, and have substantial reserve capacity to support the addition of new video requirements, expanded IP-based voice and data services, and support backhaul for a potential mobile wireless solution.

Public Safety Networking

Some representative examples of Mr. Wirth's projects include:

- Designed, implemented and tested a backhaul network for the **Arlington County, Virginia** public safety radio network. The backhaul network consists of SONET equipment over a county-owned fiber optic network that increases the reliability and availability of the public safety radio system.
- Lead engineer for the design and implementation of a 19-jurisdiction regional fiber optic public safety interconnection network in the **National Capital Region** (DC, MD, VA).

NCRnet provides an interoperable, robust, and reliable fiber infrastructure to augment the communication capabilities of first responder communities in the NCR. These communities include local and regional law enforcement, fire, emergency management, transportation, and public health agencies.

- Collaborated on the development of a master telecommunications plan for the **Delaware Department of Transportation**. The plan acts as a guide for the department to consolidate several disparate network environments into a unified communications network capable of supporting current and future transportation and public safety applications. Part of the plan involves developing a system-level design that incorporates fiber optics, microwave, and land-mobile radio. The plan requires coordination among a variety of state agencies to develop a network that meets the department's critical public safety requirements.

Video and Broadcast Communications Engineering

Mr. Wirth's experience includes the design and implementation of video, voice, and data networks. Some select examples of his work include:

- Developed a design and integration solution for cablecast channels for **Monterey County, California**. Analyzed the existing audio-visual and broadcast systems and developed recommendations for future development. Designed an IP-based video server system capable of recording and airing live meetings and scheduling cable/broadcasts. Completed on-site integration, testing, and training on the video server system.
- Designed and implemented state-of-the-art videoconferencing and teleconferencing tools for the 19 jurisdictions in the **National Capital Region** Emergency Operations Centers (EOCs) and Emergency Communications Centers (ECCs). CTC developed the systems' designs and oversaw implementation to interconnect the EOCs and ECCs throughout the region, under a grant from the U.S. Department of Homeland Security Urban Areas Security Initiative (UASI).

PRIOR TO COMING TO CTC IN 2004

1998 – 2003 Schnabel Engineering, Inc., *Technician*, Baltimore, MD

EDUCATION

Bachelor of Science, Electrical Engineering**,** University of Virginia School of Engineering and Applied Science, Charlottesville, VA, 2004

Executive Session

- Administrative Report
- Outage Report – John Amery

Qlife – Executive Session

Customer Outage Report

By John Amery – Aristo Networks

January, 2017

New Events

Customer	Issue	Resolution	Status
Gorge Networks / Wave Broadband / City of The Dalles	A broadcast storm / flapping issue presented itself on interfaces shared by Gorge Networks, Wave Broadband, and City of The Dalles. The issue presented itself in 3 separate instances for a couple of hours each time throughout a week or so period.	The root cause of the issue was never fully determined. Each party involved made changes in efforts to limit propagation. Qlife limited the vlans shared by Gorge Networks and Wave Broadband to a single switch. Qlife was unable to do so with connections from Gorge Networks to City of The Dalles due to topology requirements. Cleanup was also performed by all parties regarding any forgotten rogue vlans. No more instances of broadcast storms have shown up since the 1st week of January. It is currently believed the issue has likely been resolved even though the root cause is still undetermined.	CLOSED
Google	High loss on dark fiber in two separate locations within Qlife network.	Google contacted Qlife regarding one of their dark pairs on Qlife. Google sent OTDRs reflecting issues within Qlife's network. The issues appeared to be within the area Qlife previously experienced issues with strength member extrusions. Qlife developed an emergency maintenance as there was concern the issue may be related to weather (either ice in	

Customer	Issue	Resolution	Status
		cont from page 1.... splice cases or possibly an extruding strength member into a case damaging fibers). Unfortunately at the last minute Google informed Qlife they were unable to provide Qlife access into the local plant for testing purposes (weather limited their available staff) during the scheduled emergency maintenance. Qlife opened cases where it was likely the issue may have existed but were unable to locate any issues visible by sight. Moving forward Qlife is working with Google to schedule additional maintenances to work on the issue. Having access to Google's plant is imperative to issue resolution such that we can live test with an OTDR while we are opening cases to better narrow down where the issues are located.	OPEN

Outstanding Open Tickets

Customer	Issue	Resolution	Status

Old/New Business

- Bond Continuation Certificate
- Dan Spatz – Letter of Resignation
- Scholarship Donation Request
    - Scholarship Recipient Letters

Continuation Certificate

Bond Number: 52BSBFJ6722

In consideration of $1500.00 renewal premium, the term of bond/policy no 52BSBFJ6722 in the amount of $50,000.00 issued on behalf of Quality Life Intergovernmental Agency, as principal issued by Hartford Fire Insurance Company, as Surety, in connection with Pole Occupancy License Agreement Bond, it is hereby extended to 10/07/2017, subject to all covenants and conditions of said bond/policy.

This certificate is designed to extend only the term of the bond/policy. It does not increase the amount which may be payable there under. The aggregate liability of the Surety under said bond/policy together with this certificate shall be exactly the same as, and no greater that it would have been, if said bond/policy had originally been written to expire on the date to which it is now being extended.

Signed, sealed and dated October 6, 2016

Mercedes Trokey-Moudy, Attorney-in-Fact

HARTFORD FIRE INSURANCE CO
INCORPORATED 1810

December 29, 2016

Erick Larson, President
Quality of Life Network (Q-Life)
511 Washington Street
The Dalles, Oregon 97058

Dear Erick,

As you are aware, I'll be stepping down from The Dalles City Council effective at the end of my present term, on Jan. 9, 2017. Since I represent Council on the Q-Life board, I regret to advise you that my departure from Council will also require my resignation from the Q-Life board effective that same date. I've advised Mayor Lawrence and my fellow councilors of this pending vacancy.

It's been an honor to have represented Council on the Q-Life board, and in my earlier observational position as a newspaperman, watching the network grow from its very inception into the self-sustaining entity it is today. I am encouraged by strategic discussions now under way to ensure this network will continue to serve its essential role as a publicly-owned telecommunications resource for the citizens of The Dalles and Wasco County.

I wish you well in this endeavor, and express my sincere appreciation for this opportunity to have served that cause.

Best regards,

Dan Spatz
317 West 10th Street
The Dalles, Oregon 97058

cc: Keith Mobley, Tawny Cramer

COLUMBIA
GORGE
COMMUNITY
COLLEGE
FOUNDATION

January 3, 2017

QLife **N**etwork
313 Court Street
The Dalles, OR 97058

Dear members of **Q**Life **N**etwork:

Thank you for your generosity in supporting Columbia Gorge Community College in 2016-17 by providing two (2) $1,000 ***QLife Network RET Scholarships*** to CGCC Foundation. These two scholarships were awarded to renewable energy technology students. We are grateful for your contribution, and with your help, we are able to further our mission to build dreams and transform lives by creating opportunities for lifelong learning.

We would like to know if you are interested in continuing to support RET scholarships for 2017-18 academic year. If so, we would be grateful if you could please provide confirmation as soon as possible. It is important for the foundation to receive the scholarship donation before June 30, 2017, or close to that date, for budget purposes.

Last year, the following criteria were established so that the foundation could select quality scholarship recipients for your scholarships:

- Two (2) $1,000 scholarships awarded in fall, disbursed over three academic terms
- Scholarships may be used for tuition and/or books
- Recipient must be enrolled in the renewable energy technology program
- The name of the recipient will be disclosed to donor when award is accepted

Scholarship recipient is <u>required</u> to:

- Maintain satisfactory academic progress set forth by CGCC and CGCC Foundation
- Agree to scholarship terms

In the instance that you would like to contribute a dedicated scholarship for 2017-18, please let us know if there are any changes to the selection criteria. Thank you for supporting Columbia Gorge Community College. If you have any questions, please feel free to contact the foundation.

Sincerely,

S Hoppe

Stephanie Hoppe
CGCC Foundation Director

Thank you for your support!

November 28, 2016

Saul Ascencio
4405 Hwy 30 West #610
The Dalles, OR 97058

Dear Columbia Gorge Scholarship Donor Foundation,

I am honored to be one of the recipients of your scholarships for the second year in a roll. Thank you for your generous support and because of that, I am able to attend college and still support my family. I am a father of 3 and a husband. I have been working part time and attending school full time. Although this has been a huge sacrifice for my entire family, having your financial support and the support of my family, I know I can reach my goal. My goal is to complete the RET program with an Associates in Science and I am 6 months away from achieving it.

I didn't graduate from high school. I was incarcerated at 16 years old and never imagined I would be in college. I was released from prison, and within a few years I finally received my GED. I decided a few years later that the only way to be successful, and be a good role model to my boys was to go to college and get my degree. I am immensely thankful and proud in the vote of confidence that you have given to me.

Thank you,

Saul Ascencio

16 November, 2016

Dear CGCC foundation administrators,

I am writing to you today to express my sincere gratitude for being selected as a recipient for the $1,000 Qlife Network Scholarship. The scholarship money will go a long way toward helping me achieve my educational goals at Columbia Gorge Community College.

I am an unusual student at CGCC, in that I already have an advanced degree. My degree, however, was in music. Music is something that I've always loved but, after unsuccessfully trying to piece together a career as a performer for a decade, I decided last year that I wanted to try a new path. At the time, I was living in Berlin, Germany, and working as an English teacher. From there, I began searching for schools where I might be able to prepare myself for a career that satisfied my four, very simple requirements.

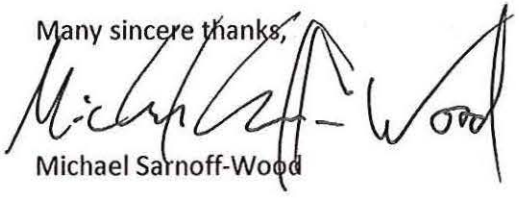
- My future career should provide enough money to live on, without worrying about how I am going to pay next month's rent.
- My future career should allow me to learn every day.
- I should be able to believe in my future career
- My future career should not put me behind a computer for eight hours every day.

After researching schools and professional programs both in Germany and the USA, I decided that it was time for me to return to my home state of Oregon, and begin studying renewable energy technology at CGCC. Keeping my future career requirements in mind, I decided that the RET program at CGCC was the best investment that I could make.

After graduating, I look forward to being able to apply the knowledge I have gained at CGCC in the field of renewable energy. I think my skills might be particularly well-suited to international operations, as well, as I can speak a number of foreign languages. I do not know where my new career will take me, but I am looking forward to finding out.

In the meantime, I will continue to study hard and use this time to learn as much as I can about renewable energy technologies. The Qlife Network scholarship will help me to do this a lot, as university is always an expensive proposition.

Many sincere thanks,



Michael Sarnoff-Wood