Part III: Costs (A Brief Mention of 'em)

by Common Frequency

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1. Part III Contents

This section is by no means an exact identifier of what you are going to spend. Costs associated with startup equipment depend upon what type of operation you are planning. Some new NCE stations will be 100-watt transmitters in the back of someone's house. Others will be 100,000-watt transmitters miles from a studio. Some people may opt to go with used equipment—others, new. We can pinpoint roughly what you need to spend once you get a preliminary engineering study done. That will show you the type of transmitter and studio-to-transmitter link you'll need. If you want to get a price quote on the minimum amount you might be spending, refer to document *III-S Supplement: Equipment Cost Worksheet*.

Additionally, refer to *IV Technicalities* for more info on technical radio stuff.

1. The Hardware

Before putting together a radio station, one of the first questions an organization has is "how much does it cost?" The answer is, "somewhere between $10,000 and $150,000+ dollars" for the equipment. Why such a wide margin? Well, putting together a radio station is much like buying a car. You could buy a Honda for $3000 from an owner who gave the thing regular oil changes and it could be as reliable as new BMW for $40,000, but which handles and drives better? You could also buy a Mercury Topaz for $500 with a salvaged title from an auto auction and it won't last two weeks before the transmission drops out. Do you live on a dirt road? Maybe you need to spend more on an SUV (SUV hybrid, of course). All of these vehicles will get you from *point A* to *point B*. How much you invest in a car is likely dependent upon how much money you have in the bank, if you know a friend you can get you a deal on a car, if know a good mechanic, what you need it for, etc. Personally, I prefer a bicycle when possible.

Every car needs an engine and transmission. Those necessities translate to a transmitter and antenna for a radio station. The studio equipment might translate to the handling and

performance of a car. Radio/car metaphors can be made ad nauseam, so I'll get to the point: price varies depending on what you need for the job, how much you are willing to spend, and what resources you can tap into.

Facilities: You'll want to price the rent on the place you want to put a studio. The studio can be located virtually anywhere. If the station is part of a school or university, it may be just a matter of securing a couple rooms somewhere. Consider locations near places that are already staffed, like a home office, community center, business, etc. The studio can be as small as a large closet. If you are a community access cable organization, it is just a matter of integrating a new studio into your setup.

Radio transmission-associated equipment: This is where the variability comes in. It is generally assumes that your transmitter site will be located in a different location from your studio. Thus, you will need a microwave link and transmitter remote control or some other reliable studio-to-transmitter link. Additionally, there's variability in regards to the amount of wattage you have and how many antennas you need. The amount you need to spend will become clear once you have a preliminary engineering study done. Here's one example for transmitter setup that has a link from a studio to a transmitter, and an inexpensive antenna. For a more wattage-specific setup, refer to document *III-S Supplement: Equipment Cost Worksheet*.

4000 Watt FM Transmission Equipment Example: *New Equipment*

*Energy-Onix Microwave Transmitter and Receiver	5500
*Sine Systems RFC1B Dial-up Site Controller & Relay Unit	1700
STL Antennas	1500
TX20 Exciter 1800	1800
Broadband 4-Bay Antenna (w/ power divider, Belden 9913 Cable)	3200
PTEK 1KW Amp	6000
Energy-Onix Maximizer III Stereo Generator/Audio Processor	1695
Mid Atlantic ERK2720 (add front door) Rack	500
Mid Atlantic PD915R Power Dist	100
STL cable, connectors, misc parts	1000
Total	$22,995

Add antenna installation labor, if needed
Add mast, if needed

When you get a preliminary study done, the engineer can usually tell you what the equipment might cost. Some people have put together low-power FM's with used equipment for under $10,000, or sometimes it can cost more than $100,000 for a 100,000-watt radio station. Another major expense that can come into play is if you

require a custom-pattern antenna, which can add $10,000+ to the top of your shopping list.

Labor: There are a few things you probably don't want to do that might come up. Climbing a tower? Installing a high-voltage shutoff switch? Aligning a radio link? If there's a will there's a way. Maybe there's someone in your community into HAM (amateur) radio that can help. You aren't going to be left in the dark. There are people out there who can help. Prometheus Radio Project, Common Frequency's "older brother (or sister!)" non-profit helps community group help build radio stations (www.prometheusradio.org). It's called community radio because everyone gets together to make it happen. Regardless of what you know about radio, you can build your own station (believe it or not!). Prometheus has helped build several LPFM stations using volunteers! Read:
http://prometheusradio.org/barnraisings/overview/barnraising_overview.html

The Studio: The studio is where you broadcast from. Here is an example of pricing a studio:

Pricing Estimate Example:
The Prosumer Studio

BEHRINGER B1 Mic w/shockmount	(x2)	220
OCWhite stands	(x2)	160
GEMINI CDX1	(x2)	260
RDL RUUDA4 Unbal 2x4 Distribution Amp		140
BEHRINGER VX2496	(x2)	200
BEHRINGER MONITOR 1C Speakers		50
BEHRINGER EURORACK Mxr.		240
BEHRINGER MDX2600 COMP/LIM/EX		120
BEHRINGER HA8000 Headphone Amp		150
ART SL1 AMP		200
ART Cleanbox (Bal-Unbal Converter)	(x2)	100
BELAR FMM2 Mod Monitor		2000
GORMAN-REDLICH EAS Enc/Decoder		1700
JK AUDIO Hybrid w/ rackmount		200
HENRY ENGINEERING Mix-Minus		160
SONY TCWE475 Tape Deck		150
Mid Atlantic RK 12 Rack		120
Atlas Sound 900-28 Rack	(x2)	280
Building Materials for Furniture		500
Cables, and connectors		500
Sennheiser HD202 Headphones	(x5)	100
		$7,550

OR, a more professional studio might be around $14,000, listed below:

Pricing Estimate Example:
Entry-Level Broadcast Quality Studio

AT, Beyer ,or EV w/ shockmount	(x2)	1000
OCWhite stands	(x2)	160
Marantz PMD331 CD	(x2)	1000
AEQ BC312 Console		3200
SYMETRIX 302S Mic Pre-amp	(x2)	600
ART SL1 AMP		200
BEHRINGER HA8000 Headphone Amp		150
ROLLS RA63 Distribution Amp		150
Event 20-20 Studio Speakers (Pair)		170
BELAR FMM2 Mod Monitor		2000
GORMAN-REDLICH EAS Enc/Decoder		1700
SYMETRIX 422 AGC Leveler		540
RADIO SYS DI-2000 2-line dig phone hybrid		1000
MARANTZ PMD505 Tape Desk		380
Mid Atlantic RK 12 Rack		120
Atlas Sound 900-28 Rack	(x2)	280
Building Materials for Furniture		700
Cables, and connectors		500
Sennheiser HD202 Headphones	(x5)	100
		$13,950

+Add turntable ($180), Automation software (free), and computer ($800).

Summary

Right now it is best to focus your efforts on completing the application. However, the costs that are coming up a few years from now are certainly important to consider. Essentially the main costs in starting a radio station are: TRANSMITTER EQUIPMENT + STUDIO EQUIPMENT.

In addition to your primary studio, you may need a second studio to edit audio. At last resort, you can just set-up a computer station for this. PC's have almost taken over all the aspects of a studio.

Things can also be done on the cheap. Let's say you contact a local commercial station and they're replacing their transmitter, or you buy a used transmitter you saw in an ad in back of *Radio World*. Then you purchase a low-cost mixer and some garage sale CD players. *It could work!* Although it's best to build things right the first time, if you're

struggling to get on the air that third year of your FCC construction permit, you gotta do what you gotta do.

Where do I find this equipment?

For prosumer equipment (a notch below professional broadcast quality equipment) you can price search at Musician's Friend online. For other items, you can either go to a broadcast supplier, or call up the company's sales office. Under ***More Information*** below you'll find links to these places. Most likely you'll be looking for the price of antenna or transmitter. If you are looking for cheap new transmitter, you might want to consider looking at Bext, Energy-Onix, Crown, or PTEK for something more affordable. Energy-Onix also has some affordable studio-to-transmitter linking possibilities. However, if you ask an engineer, they'll tell you to buy the more reliable brands—and rightfully so; this is recommended if you have the money. Additionally, there are places to find used equipment (some links in ***More Information***). Sometimes even calling the engineering department at a local radio station might reveal some clues.

2. Even further down the line: Operating Cost

The bottom line is anyone who is responsible and has some spare time can run a radio station. High school and college kids run radio stations. You just need a few dependable people that can read and understand the rules, teach others, and some volunteers to help execute the work that needs to be done. Your local NPR station tells you it takes millions to operate an NCE station during a fund drive. That's true, but most of the money goes to pay professionals to operate that station. If you take away the paid staff and fancy studios, and move the operations to your art space in a warehouse next to with low rent, you are basically just paying for transmitter, studio maintenance, music licensing, and power. Taking this into account, while assuming rent is excluded and there is a volunteer to invest time in engineering maintenance, that same three million dollar operation becomes a $25,000 operation running on more passion. Take for instance WREK Atlanta, broadcasting from Georgia Tech with an amazing 40,000 watts. While compensating some student staff with $10,000/year for labor, they run the station with a $36,000/year budget. Most likely you won't be broadcasting with 40,000 watts, or even 10,000 watts.

Take for instance a 2,000 watt station. Let's say we've arranged everything in our favor:

- A local amateur radio hobbyist is found who is willing to check on the transmitter weekly for volunteer work. *A common misconception is that the station engineer needs to be some professional with a bunch of licenses—not true. The designated "chief operator" at you station needs to understand applicable FCC rules, and enough to keep the equipment calibrated, certified, and maintenanced.*

- The station broadcasts on automation most of the time, broadcasting syndicated shows produced elsewhere. Therefore, wear and tear on studio equipment is minimal.
- Rent is free because you found space on campus or a space your organization already rents that has phones and internet.
- You have free tower space.
- Everyone at the station is a volunteer.

Under this scenario, monthly expenses include power/utilities ($200-500), some office supplies (200), replacement parts (400), and an emergency fund. That ain't that much, in relative terms. The idea is to get on the air. You can build upon a minimal operation until it becomes a fully funded, functioning radio station. Community stations must start off small and gain momentum in the community to naturally level-off at a comfortable operating budget appropriate for their community. However, some of you might be running larger stations where you might be renting tower space and paying people. Again, don't be afraid to ask questions regarding what your specific endeavor might cost.

If you are a cable television access outlet, many of your existing staff can be trained to deal with a radio set-up. It is just a matter of clearing a closet out to set up a DJ booth and setting up a transmitter location; expenses can almost be internalized by combo-ing them with other media activities.

Community stations can bring in income to pay for their expenses. Yes! Businesses can run underwriting announcements and you can do on-air pledge drives. This is how all community radio stations survive.

<u>Annual Budget, Dollars, for Non-Commercial Stations</u>

LPFM and small volunteer stations ~100 watts	1000's
Student-run, or volunteer NCE station	Under 100,000
Large college station, or community-run radio	Under 200,000
Organized established community station, or small NPR	500,000 or under
Large community station in large market	500,000-1,000,000
NPR Affiliate	500,000-2,000,000
Large NPR or Pacifica Affiliate	2,000,000-5,000,000
Large market NPR	5+ million

Station Advancement: When you go on the air

At some time during station development your organization might gain momentum and want to take it to the next level with multiple staffers and autonomy from a parent organization. The following are examples of possible staffing scenarios (anything is possible):

Staffing expense

A. Volunteer Station

All Positions Volunteers *No Income Line Item*

= $0/year

Yes, some radio stations are all volunteers. Automation software with you home PC, and collocating the radio station at an established business or community center has made this all possible.

B. Student or Tight-Knit Community All Volunteer Operation

Engineering Hobbyist	$20/h x 27 h/m	540
Volunteer Asst Engineer/Chief Operator		0
Part-time+ station Advisor/General Manager		$1600
Student General Manager, or Volunteer Asst.GM		0
Quarter-time Underwriting, or Development Director (commission avail)		480
FICA/Medicare		3400
Contract CPA or School Admin Cost	$200/m	2400
All other positions volunteer		0

=$37,240/year

C. An All Stipended Student Staff

General Manager	100/week	~400/month
Program Director	85	340
Volunteer Coordinator	55	220
(Professional Contract Engineer*	$50/h x 6 h/m	300/month)
Chief Engineer	80	320
Asst Engineer	45	180
Business Manager	70	280
Underwriting Director	40	160
Production Director	50	200
Music Director(s)	55	220
Publicity Director	55	220
News/Public Affairs Director	70	160
Computer Tech	45	180
	750/week	$ 41100

		for 50 weeks
School Admin Costs for Accounting		2400

=$43,500/year

B. Student or Tight-Knit Community Operation + Professional Engineering

Professional Contract Engineer (Repairs only)	$50/h x 27 h/m	1350
Chief Operator/Asst Engineer Intern Position	$85/week stipend	345
Part-time station Advisor/General Manager	$20/h x 80 h/m	1600
Student General Manager, or Volunteer Asst GM	$85/week stipend	345
Underwriting/Business Director	$12/h x 40 h/m +com	480
FICA/Medicare		3550
2. Contract CPA or School Admin Cost	$200/m	2400
3. All other positions volunteer		0

=$55,390/year

C. Student or Community Compensated Core Staff + Professional Engineering

Professional Contract Engineer (Repairs only)	$50/h x 27 h/m	= 1350
Chief Operator/Asst Engineer Intern Position	$85/week stipend	= 345
Part-time station Advisor/General Manager	$20/h x 80 h/m	= 1600
Student General Manager, or Volunteer Asst GM	$85/week stipend	= 345
Underwriting/Business Director	$12/h x 40 h/m +com	= 480
Development/Volunteer/Office Coordinator	$15/h x 40 h/m	= 600
Independent Contract Work	$5000/year	
FICA/Medicare		4300
4. Contract CPA or School Admin Cost	*$200/m*	
2400		
5. All other positions volunteer		0

=$68,340/year

D. Four of any Positions

Four of any full position $25,000/year	$8333/m
(say *Manager, Engineer, Business, Development*)	
Benefits	1830/m
Contract CPA	250/m

=$124,400/year

As you can see, the level of money you can spend varies! Its up to how you want to serve your community.

Yearly Costs

Repair and Maintenance		4000-12,000*
Music Licensing (varies)		
BMI		250
ASCAP		250
SESAC		80
Telephone/Internet	200/month	2400
Power		6000
Printing and Copying		2000
Mail		1000
Office Supplies		1000
Computer Supplies		500
	Total	17480

*Dependent upon your operation.

Other costs you can consider

Rent	____
Tower Rent (if applicable):	____
Replacement Reserve (If you want backup money in case of problems)	____
News Subscription Service (like Pacifica, FSRN, etc)	(2000, if you choose)
Publicity	2000
Dues to organization(s) (like NFCB, IBS, etc)	500
Magazine Subscription(s) (CMJ, Radio World, etc)	600
Publicity & Advertising	____
Internet Streaming Fees	1500
Pacifica Network Affiliate Fees (call Pacifica if interested)	____

Income

As seen in the individual station example above, it is possible for a station to finance itself. Start-up costs can be covered through local fundraising, grant writing, or a parent organization. Once a station is started, on-air underwriting, on-air fund drives, annual listener memberships, T-shirt sales, and benefit shows can generate income for an annual

budget. Additionally, grants are available from agencies such as CPB (Corporation for Public Broadcasting) if you have a certain number of full time employees.

Perhaps the biggest question you will have is, "How do I get the money to start up?" Well, to best answer that it may help to actually call a community station that just started up. Your best bet is contacting an LPFM (since they are fairly new) that might be most like the type of station you're trying to start. Some community-related LPFMs on the west coast are KYRS, KRFP, KDRT, KPOV, KKDS, KFOK, and KNFS. KPFZ is an LPFM in Clearlake, CA that just got approved for a full-power station (http://www.kpfz.org/). Prometheus and NFCB might have some suggestions, too.

List of some other LPFM stations (http://www.angelfire.com/nj2/piratejim/lpfm.html).

Examples of established, fully functioning established non-commercial radio stations:

WREK Atlanta, Georgia

Type:	University (Georgia Tech)	**Coverage:**	All Atlanta metro
Volunteers	30-40 students, 5 community	**Total Budget:**	**$36,000+**
Staff:	GM $150/month+ other	**Engineer:**	$150/m student + faculty
Funding:	36,000/year from school + 50,000 last two years from sports sponsors		
Notes:	$10,000 goes to staff each year. Since tower is on campus, Georgia Tech absorbs power, maintenance, and rental costs. Engineering is provided by students and faculty.		

KDRT-LP Davis, Ca (LPFM)

Type:	Community	**Coverage:**	Davis (60,000 people)
Volunteers	variable	**Total Budget:**	**$19,000**
Staff:	$2300 year to staff organizer	**Engineer:**	$2300 & Volunteer
Funding:	Startup costs from Founding Donor campaign, Underwriting, On-air fundraiser		
Notes:	Building is owned by parent organization.		

WAIF Cincinnati, Ohio

Type:	Community Group	**Coverage:**	All Cincinnati Metro
Volunteers	150	**Total Budget:**	**$75,000 – 100,000**
Staff:	All volunteers, no paid staff	**Engineer:**	Volunteer
Funding:	Two annual fundraisers, 25% Underwriting, and local grants		
Notes:	Efficiently run station		

KZSU Palo Alto, CA

Type:	University (Stanford)	**Coverage:**	1/3 SF Bay Area
Volunteers	100	**Total Budget:**	**$90,000**
Staff:	All student/volun minus Engineer	**Engineer:**	Volunteer+$20,000/yr
Funding:	Underwriting, Stanford University		
Notes:	$25,000 repairs budget		

KSER Everett, WA

Type:	Community	**Coverage:**	North Seattle Metro
Volunteers	100	**Total Budget:**	**$170,000**
Staff:	All volunteers minus 1 ½ full	**Engineer:**	Contract Engineer
Funding:	Two annual pledge drives ($40,000-70,000), $12,000 Underwriting rest of income from leasing out tower space, membership donations		
Notes:	Full time Manager $30,000, part-time Station Development Director $20,000		

KMUD Garberville, CA

Type:	Community	**Coverage:**	North Calif Coast
Volunteers	100	**Total Budget:**	**$425,000**
Staff:	All volunteers minus six full time and some part-time	**Engineer:**	$24,000/yr + Vol
Funding:	Two annual pledge drives (140,000), Underwriting (1/3 income), $100,000 CPB grant		
Notes:	*Three* individual broadcast stations; income around $24,000/yr for full-time		

KGNU Boulder, Co

Type:	Community	**Coverage:**	Boulder + Denver
Volunteers	230	**Total Budget:**	**$700,000**
Staff:	Volunteer + 7 full, 1 part-time	**Engineer:**	Contract + Volunteer
Funding:	Two annual fund drives (450,000), ~$100,000 CPB grant, and underwriting/benefit events, etc for the rest		
Notes:	Just purchased an AM station to better cover Denver for three million.		

3. More information

Radio Information

NFCB www.nfcb.org

Prometheus	www.prometheusradio.org
Common Frequency	www.commonfrequency.org
College Broadcasters Inc	www.askcbi.org
Grassroots Radio	www.kgnu.org/grassroots/index.html
IBS	www.ibsradio.org

Services

Community Media Services	www.nanrubin.com/html/cms.html
John Crigler, Broadcast Attorney	email: jcrigler@gsblaw.com
Michael Couzens, Broadcast Attorney	www.lptv.tv
Pacifica	www.pacifica.org
Public Radio Capital	www.pubcap.org

Broadcast Suppliers

Bradley Broadcast	www.bradleybroadcast.com
BESCO International	www.besco-int.com
Broadcast Electronics	www.bdcast.com
Broadcast Connection	www.broadcastconnection.com
Broadcast Store	www.broadcaststore.com
Broadcast Supply Worldwide	www.bswusa.com
Erickson Broadcast Sales	www.ebsradio.com
FM Transmitter.com	www.fm-transmitter.com
Harris Broadcast	www.broadcast.harris.com
Pacific Radio	www.pacrad.com
Pro Audio	www.proaudio.com
Progressive Concepts	www.progressive-concepts.com
Recording Media & Equipment	www.rmeinc.com
RF Specialties Group	www.rfspec.com
SCMS, Inc	www.scmsinc.com
Sofratec	www.sofratec.com
Talley Communications	www.talleycom.com

Used Broadcast Equipment

Bay County	www.baycountry.com
PMA Marketing	www.amfmtv.com
Radio Gear, Inc	www.radiogearinc.com
Radio World (via free subscription)	www.rwonline.com

Broadcast Equipment Manufacturers

AEQ	Consoles, Codecs, Routers	www.aeqbroadcast.com
Andrew Corp	Transmission Line	www.andrew.com

Antenna Concepts	Antennas	www.antennaconcepts.com
Arrakis	Consoles/Furniture	www.arrakis-systems.com
Armstrong	Transmitters, STL	www.armstrongtx.com
ATI	Radio Equipment	www.atiaudio.com
Audio Arts/Wheatstone	Consoles	www.wheatstone.com
Audiolab/Garner/RF Sys	Degaussers/Isocouplers	audiolabelectronics.com
Autogram	Consoles	www.autogramcorp.com
Belar	Mod Monitors	www.belar.com
Bext	Transmitters	www.bext.com
Bird Electronics	Meters, Filters, Loads	www.bird-electronic.com
Broadcast Technology	Transmission Equipment	www.broadcasttech.com
Broadcast Tools	Routers/Phone Couplers	www.broadcasttools.com
Broadcast Warehouse	Transmitters	broadcastwarehouse.com
Burk	EAS, Remote Equipment	www.burk.com
Cablewave	Transmission Line, etc	www.cablewave.com
CMBE	Antennas	www.cmbe.com
CRL	Audio Processors	www.crlsystems.com
Circuit Works	Telephone Acc/Couplers	www.broadcastboxes.com
Coaxial Dynamics	Cable, Meters	www.coaxial.com
Comrex/Gentner	Telephone Interface/Codecs	www.comrex.com
Conex	Phone Interfaces	www.conex-electro.com
Crown	Transmitters	www.crownbroadcast.com
Delta RF	Transmitters	www.drft.com
Dielectric	Line, Antennas	www.dielectric.com
DRS	Transmitters	www.contelec.com
Electronics Manufacturing	Replacement Parts	www.rectifiers.com
EMR	Antennas, Filters	www.emrcorp.com
Energy-Onix	Transmitters, STLs	www.energy-onix.com
ERI	Antennas	www.eriinc.com
Gorman-Redlich	EAS	www.gorman-redlich.com
Henry Engineering	Audio Interfaces	www.henryeng.com
Illbruck	Sound Tiles	www.illbruck-sonex.com
Inovonics	Processing/Mod Monitor	www.inovon.com
Jampro	Antennas	www.jampro.com
JK Audio	Telephone Interfaces	www.jkaudio.com
Kathrein Scala	Antennas	www.kathrein-scala.com
Kay Industries	Phase Converters	www.kayind.com
Logitek	Consoles	www.logitekaudio.com
LPB/Fedelipac	Consoles/Transmitters	www.lpbinc.com
Luxo	Mic Arms	www.luxo.com
Magnum	Towers	www.magnumtowers.com
Marti	STL	www.martielectronics.com
Microwave Filter Co	Filters	www.microwavefilter.com
Middle Atlantic	Equipment Racks	www.middleatlantic.com

Moseley	STL	www.moseleysb.com/mb
MTS	EAS	www.mts-comm.com
Murphy	Studio Furniture	murphystudiofurniture.com
Musicam	Codecs	www.musicamusa.com
Myat	Transmission Line	www.myat.com
Nautel	Transmitters	www.nautel.com
Nexus	Transmitters	www.nexusbroadcast.com
Nicom	FM amps, antennas	www.nicomusa.com
Northern Technologies	Power Products	www.northern-tech.com
Radio Systems	Radio Products	www.radiosystems.com
RVR	Transmission Equipment	www.rvrusa.com
OC White	Mic Arms	www.ocwhite.com
OMB	Transmitters	www.omb.es/en
PCS Electronics	Transmitters, etc	www.pcs-electronics.com
PTEK	Transmitters	www.ptekpower.com
QEI	Transmitters	www.qei-broadcast.com
SBS	Transmitters	www.sbsfm.com
Shively	Antennas	www.shively.com
SWR	Antennas	www.swr-rf.com
TFT	Transmitters,STL,boosters	www.tftinc.com
Trylon	Towers	www.trylon.com

Audio Product Manufacturers

Most audio products can be found through a distributor. For higher-end broadcast audio, places like BSW, Bradley, or Proaudio carry those products. Prosumer and consumer products can be found many places online, such as Musician's Friend (www.musiciansfriend.com).

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