These notes were prepared by David Sidi for the Information Policy course IST 618 at Syracuse University, Spring 2018. Please do not share them without permission, which can be obtained by emailing david@sidiprojects.us.

Universal Service Assignment Notes

I. Why are we doing this?
   A. we're bidding to become a monopoly.
      i. wait, what? Why is the government giving out a monopoly position in selling broadband?
      ii. in general, a monopoly is better able to handle the high capital investment (in particular, infrastructure) costs, and the costs of regulation than a participant in a competitive market
         a) here the regulation is *tariff equivalency*: basically, charging the same price to urban (low-cost) as to rural (high-cost) customers
         b) Question: why does being a monopoly help?
            - Answer: a monopoly can charge people in a lower cost area more to make up for a higher cost area, without being subject to competitive pressure in the lower-cost area
            - Question: what's that called?
            - Answer: a cross-subsidy. The low-cost area is subsidizing the high cost.
               - Question: Health related example?
               - Answer: ACA/Obamacare has a similar idea: by having an individual mandate, healthy people subsidize sicker ones.
      iii. now, suppose there is competition in the low-cost market, where you're supposed to be making up for the losses in the high-cost market: the price is then driven down by competitors, and there's no "cross-subsidy" to let the company be profitable overall
         a) result of that? rural customers don't get served
      iv. Question: So in a competitive market, one way to differentiate is to be cheaper. What provides an incentive to not *over*charge if you're a monopoly?
         a) Further Question: What's "reverse bidding"
            - Answer: how low can you go?
         b) So we have competitive bidding at the start (+ restrictions on changing prices, probably)

II. That's the background. Now for the computations.
   A. Part of the assignment was deciding what to use and what to ignore
   B. So let's ask: what do you need to know in order to determine the subsidy from the government?
      i. Question: You're going to be a monopoly: you can cross subsidize, right? So why does the government need to give you anything?
      ii. Answer: Well strictly they don't, but in this context you're looking for a way to fairly balance a potential subsidy from the government against a cross subsidy.

III. okay let's calculate how to get the price in the simplest way I could think of, using some generous assumptions

A. Assume: negligible costs to keep things running: all costs are up front
   i. Why is this reasonable? The maintenance costs will probably be dwarfed by the set up costs we're given, so this is a simplification. We could always assume some value for maintenance over the 15 years, add it in, and do everything the same way.

B. we can calculate the cost per household for urban and rural parts of the county over 15 years
   i. Cost is \$300K per mi^2, and we know the household density: there are 75 houses per mi^2 in the urban area.
      a) So \$300K to serve 75 houses, or **\$4000 per house in urban areas**
      b) similarly, we get **\$12,000 per house in rural areas** (that is, lesser density in rural areas means it's 3X more expensive to set things up there)

C. These numbers are spread over 15 years. So let's get the cost per month
   i. \$4000 / (15*12) = **\$22 monthly, urban**
   ii. \$12000 / (15*12) = **\$66 monthly, rural**

D. if we set our price using these numbers, we'd break even. We can't, since
   i. we want our revenue to exceed our costs (i.e., we want a profit)
   ii. the two prices are different, and we have to respect tariff equivalency

E. Problem: how to set a price, from this cost information?
   i. if we charge both urban and rural the lower urban cost, we'll need a big government subsidy, including not only to get to break even, but some profit
   ii. if we charge both the higher rural cost, we're inviting regulation
   iii. simple thing to do:
      a) at the start, add some profit to the 300K cost, and do the above calculations again to get two new monthly values for urban and rural
         • Since I've modeled the calculations above, I leave this to you to calculate.
      b) figure out what the shortfall is from that number to what you get with t**he average of the new urban and rural monthly costs as the monthly price for the whole county**
         • this splits the difference between a cross subsidy and a governmental subsidy, which (other things being equal) seems fair
            • Question: think original position
            • Question: More specifically, how might a company show that a proposed profit is reasonable?
               • Answer: some amount that you can show is a reasonable profit for comparable businesses. Related to taxation of S-corporations WRT salary requirements.
      c) The value of the shortfall is what you request as a government subsidy