Comments to Address

- Make the connection between Part 1 and Part 2 clearer.
  - Added Section 3.2.2.3.1 (p. 50/51). Expanded on existing explanation.
- Clarify method of hydrokinetic power prediction in GEP.
  - How is the data obtained to model hydrokinetic power for Pilgrim Springs?
    - ARCgis maps, indicated in Section 3.2.2.3.1 (p. 50/51)
  - Is the prediction for power or power density?
    - Clarified that we are estimating power, Section 3.2.2.3.1
- Page 17 – remove sentence "many ML methods" …replace with:
  - Comparison of Random Forest performance against other ML methods (add SVR)
    - Added SVR to comparison, See figure 2-2 (p. 19)
  - Add graph from Slide 28 to thesis
    - See figure 2-2, p. 19, comparison across models for RF #3
- Explain more fully why the Manning equation is largely inadequate
  - See explanation in Section 2.2.3.1 (p. 17)
- Add additional error metrics: RMSE, MAE
  - RMSE and MAE added in methods section 2.2.5.2 (p. 20)
  - See Tables 2-2 and 2-3 (p. 29 & 30), RMSE and MAE added
- Add more detail on the load forecasting method used for the GEP model
  - See Section 3.2.2.3 (p. 50). Clarified that recent historic data was used
  - See Section 3.2.3.3 for explanation on load data (p. 57)
- Who are the energy planners/decision makers using the GEP? Electric utility or community?
  - See explanation in Section 3.2.2.1 (p. 48/49)
- Describe heuristics used for eliminating NWIS sites (data completeness, in-built data quality gauge)
  - See explanation above figure 2-5 (p. 24)
- Explain how the SHAP value itself is calculated; clarify the interpretation of the x-axis of SHAP value Global Importance plot
  - See Equation (8) (p. 20/21). Clarified above that importance is SHAP value
  - Interpretation of x-axis clarified under figure 2-7 (p. 31/32)
- Explain what the biggest limitation of the RF model is – data quality? Limited data?
  - See section 5.1, first bullet point (p. 85)
- Differentiate geothermal loop from geothermal power plant; expand on how its cost is modeled in GEP
  - See Section 3.2.3.1, second last paragraph (p. 56)
- Comment on the feasibility of a Kalina cycle for geothermal in Pilgrim Springs
  - See Section 3.2.3.1, last paragraph (p. 56)
- Using breakeven diesel price for renewable system, back calculate what carbon price would need to be; add a comparison table
  - See section 3.3.1.2, final paragraph (p. 68/69)
- Elaborate on load curve sensitivity – how much extra capacity does current BESS investment allow? Mention possibility of adding 20% reserve margin to GEP model
  - See recommendation in Section 5.1 (p. 86/87) for sensitivity study on energy demand and extra BESS capacity

- Redefine BESS soc; SOC should be a ratio from 0 to 1
    - Modified graphs in Section 3.3 (figures 3-6, 3-7, 3-12) and Appendix (figures A-2, A-3) to say 'BESS charge level' instead of *soc*. In explanations of results throughout Section 3.3, replaced *soc* in discussions with *charge level*
- Highlight $11/gal diesel breakeven price
        - See explanation above figure 3-8 (p. 67)
        - Also highlighted on p. 69 when calculating carbon price
    - Describe (histogram or pdf) how often such prices occur in Alaska villages
        - See figure 3-8, p. 68
- Describe better how the 12-month load profile was modeled in the payback analysis (was GEP optimization rerun?); add more discussion
    - See explanation above table 3-8, p. 77
- Summarize all lumpiness results (across scenarios) in a table
    - Highlight the impact of this for commercial developers
        - See explanation under Table 3-7, p. 74
    - What % is saved by having appropriate capacities for community size?
        - See Table 3-7, p. 74, possible savings shown for diesel-renewables and pure renewables scenarios under lumped vs flexible capacities
        - Added % savings for diesel-renewables system in conclusion (Section 3.4, p. 80)