

Rime Icing	0.16 hours per year	Northeast of the cooling tower (< 0.5 hour of icing over 5 years on local roadways).
Salt Deposition	Maximum 675 kg/km ² -month on site	Predominantly within 200 meters of tower and on site.
Plume Shadowing	Maximum 40 hours/year	Predominantly within 200 meters of tower and on site.
Plume Visibility	Offsite visible plume estimated to occur less than 3 percent of the time, not accounting for nighttime hours, hours of precipitation and low visibility periods.	Visible plume predominantly located onsite with dimensions less than 100 meters in length, 20 to 30 meters in height and 15 meters in radius.

In summary, the Plainfield Renewable Energy Project cooling tower was evaluated for adverse environmental impacts using the SACTI model. Based on this analysis, no adverse off-site environmental effects are expected.

I. Roads

The Project is consistent with the existing federal, state and local road network. Interstate 395, State Route 12, and Mill Brook Road each have sufficient available capacity and appropriate geometric design to accommodate all the traffic that will use the facility. The Town of Plainfield implemented road improvements in recent years in order to accommodate traffic flow to the recently opened Lowe's distribution warehouse and to facilitate access to the industrial zoned property in the area. These improvements included reconstruction and realignment of Mill Brook Road and widening and reconstruction of a portion of State Route 12.

output files, which are available upon request. The maximum hours of icing are calculated by SACTI to be 0.8 hours for the entire 5-year period (0.16 hours per year on average). The contour plot of total hours of rime icing for the 5-year period is presented in Figure 2. The contour levels are from 0.1, 0.3 and 0.5 hours. The hours of icing are shown to occur parallel to Norwich Road (State Road 12), with the road experiencing between 0.1 and 0.3 hours of icing over 5 years. The predicted hours are very small and so are highly unlikely to occur. Therefore, there will be little to no concern for rime icing due to the proposed cooling tower.

6.0 SALT DEPOSITION

Average salt deposition rate as a function of downwind distance and direction were estimated using the SACTI model for each of the 5 years. A table containing the annual average data (average of five years) appears in Appendix A (see Table A-6). Each individual year can be viewed in the SACTI output files, which are available upon request. The majority of salt is deposited within 200 meters of the tower. The maximum deposition rate occurs for 1970 with a value of 675.15 $\text{kg}/\text{km}^2\text{-month}$ and occurs 100 meters north of the tower. A contour plot of the average deposition over the 5-year time period is shown in Figure 3. Norwich Road sees a salt deposition rate of 10 $\text{kg}/\text{m}^2\text{-month}$ on average. These impacts are not considered to be significant.

7.0 PLUME SHADOWING

The SACTI model predicts plume shadowing in terms of both hours of plume shadowing, as well as energy loss (MJ/m^2). The total number of hours of plume shadowing over the 5-year period is shown in Table A-7 of Appendix A as a function of radial direction and downwind distance. The maximum potential impact of plume shadowing over the 5 year period was 202.3 hours and occurred in 1972 and approximately 200 meters west-south-west from the tower (also see Appendix A for individual years). The maximum impacts are seen within a 200 meter radius of the cooling tower. Norwich Road (State Road 12) experiences between 100 and 200 hours of plume shadowing in the vicinity of the proposed site location over the 5 years modeled. This represents an annual percentage of between 0.3 and 0.5 % of the time. The maximum impacts further downwind are 60 hours over 5 years (or 12 hours per year on average) and occur approximately 2 km to the south of the tower in the vicinity of the Connecticut Turnpike. These impacts are considered minimal. A contour plot of the total hours of plume shadowing is shown in Figure 4. Contour levels are 50, 60, 100, 300 and 600 hours. Figure 5 shows the contour levels of energy loss (annual average of 5 years). Contour levels are 1, 2, 3, 4, 5 and 10 MJ/m^2 . Tabular results from SACTI are presented in Table A-8 (annual average). A similar southern impact pattern given by hours of plume shadowing is also observed for energy loss. Plume shadowing is not expected to be significant for the proposed cooling tower.

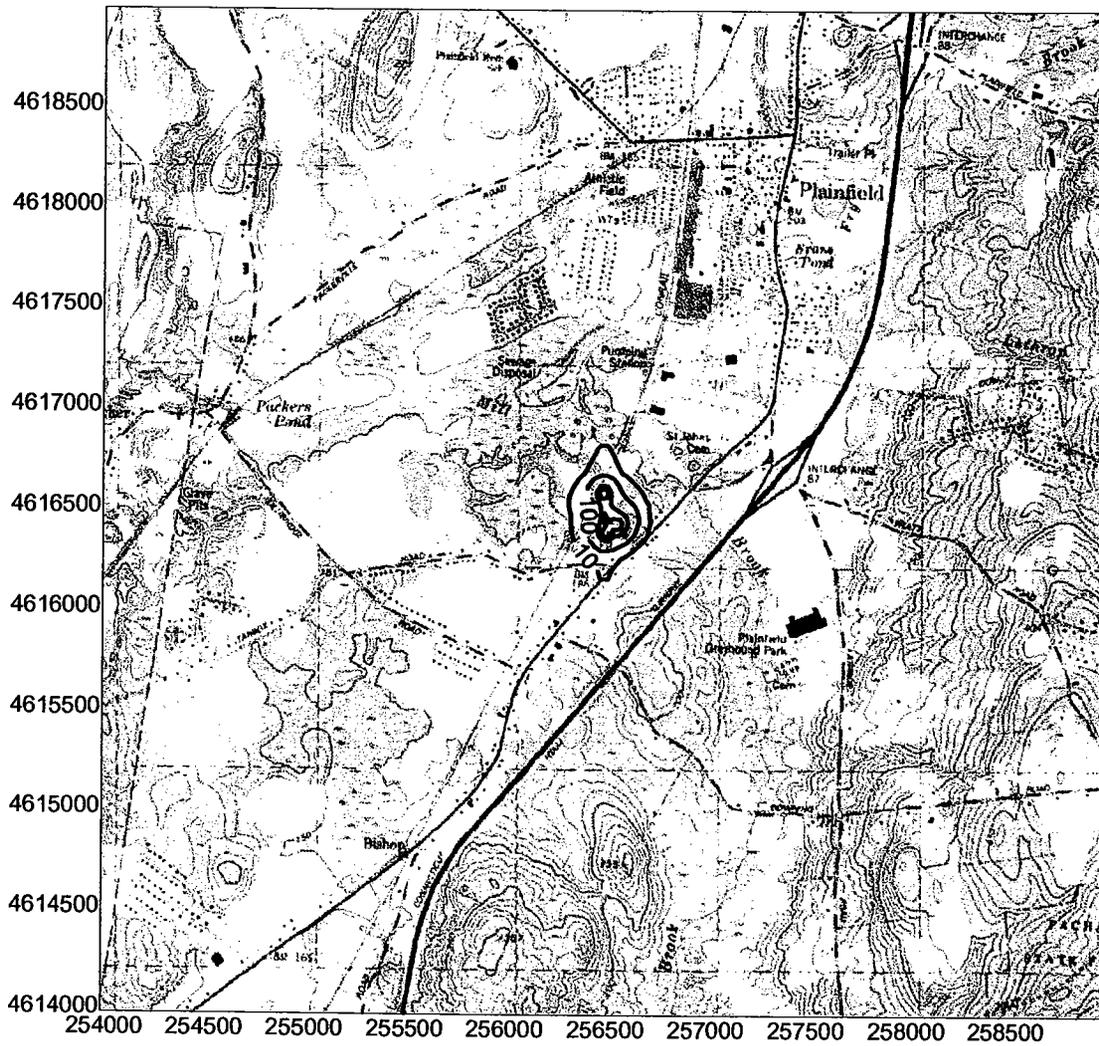


Figure 3 - Annual Average Salt Deposition Over 5 years

(Contours are from 10, 100, 300 and 400 kg/km²-month)