

# Conservation Classroom Resources

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“The world’s first vertical farm won’t be nestled among skyscrapers in uptown Manhattan or in the anything-is-possible cities such as Shanghai and Dubai—it will happen on a very modest scale, on a very modest budget, in Chicago.”



## An Inside Job

BY JENNIFER COCKRALL-KING

John Edel, a Chicago entrepreneur, has transformed an abandoned meat-packing facility into the nation’s first vertical farm. His goal is to bring large-scale, net-zero-waste food production right into the middle of the city.

### SUMMARY QUESTIONS

[worksheet available online](#)

#### What’s Inside:

- Summary Questions
- Discussion Questions
- Advanced Activities
- Build Your Own Glossary

1. What is the difference between the terms “aeroponics,” “hydroponics,” and “aquaponics”? (answer: roots of plants in air misted with nutrient-rich water, grown in water without soil, and indoor fish farming with a self-cleansing and self-fertilizing water-recycling loop)
2. What natural element (water, light, heat, nutrients) is the most important considerations for John Edel’s “The Plant” specifically because of its location? (answer: heat, due to the cold climate; runner up: light)
3. What are John Edel’s two tactics to cut energy costs? (answer: growing at night, when the cost of electricity is low due to lower demand, and having a ‘flat’



“ Just when I thought the vertical farm was decades away from reality, I learned of Chicago developer John Edel’s new urban re-use project. It lacked the ego-driven designs of other vertical farms that were languishing on paper. ”

energy consumption pattern to avoid demand spikes, which is the rate that the energy company charges you)

4. What other industries will be housed in the plant other than the vertical farm? (answer: bakery, food preparation, and brewery, plus office spaces for those businesses)
5. Briefly describe the system of Growing System Number One. (answer: growing tilapia in a series of tanks ▶ water pumped to a physical filter for solid waste ▶ pumped to where screens filled with bacteria convert nitrogenous waste into forms plants can use ▶ hydroponic plant beds with cycling lights above)

### DISCUSSION QUESTIONS

[worksheet available online](#)

1. Discuss the disconnect between elegant architecturally designed vertical farm buildings that haven’t been built, and The Plant. What other advances in conservation science have also been stymied because of human aversion to re-using old stuff or lack of aesthetic appeal?
2. There seems to be an ample market for the food that will be produced by The Plant. If the demand is there, why hasn’t urban farming been more successful? (Are taxes on the land so high that the real estate is more value for housing? Is it a matter of capital for building a new building, etc?) Are there places where you think there will be insufficient demand?
3. Discuss the common business model of urban farms in Chicago and other cities. Where do they get their funding from? How does business model of the The Plant differ from the other urban farms mentioned? (*hint: Most urban farms get their money from grants, whereas The Plant aims to be self-sustaining, with creative income generating activities such as renting out space.*)
4. What is your reaction to: “The problem with social services and 40-story urban farms is that you train a bunch of people, but there are no businesses out there to hire them.” Is it possible to create jobs by creating a trained workforce, or do we need a job market first? Think about other fields that have risen in recent history, such as conservation biology.

### ADVANCED ACTIVITIES

#### BUILD YOUR OWN GLOSSARY

- ▶ vertical farm
- ▶ industrial reuse

- 1. Multi-Use Space in Green Building Design:** Describe the benefits of having a bakery in The Plant. Find examples of other existing buildings that have similar multi-use strategies for efficiency, re-use, or waste recycling, or if they don't exist, find plans for them. Find example of strategies within domestic homes similar to these plans (e.g. hand-washing sink that feeds to the toilet tank for the next flush, *sinkpositive.com*).
- 2. Explore the Engineering and Technology:** The anaerobic digester and turbine generator are major organs in The Plant. Research how these technologies work. Are they manufactured somewhere, or do they need to be built on a case-by-case basis? Are there plans out there for building your own (similar to wind or solar panel kits)? How big does an operation need to be to make a system like this work? Could it be adapted to domestic homes?
- 3. Entrepreneurial Opportunity in 'Industrial Reuse':** As global markets shift, many US cities are finding themselves filled with empty factory buildings. In New England, we see abandoned textile mills in the countryside, and in Detroit we see closed auto manufacturing plants preventing neighborhood restoration. Where else might a vertical farm like The Plant work well? What other repurposing ideas can you come up with for these buildings? Draw up a business plan – pitch it to an investment agency!
- 4. Further Reading:** Jennifer Cockrall-King's book, *Food and the City: Urban Agriculture and the New Food Revolution*



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