

# Stefanos Axios



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March 26, 2021

City of Somerville  
93 Highland Avenue  
Somerville, MA 02143

Dear City of Somerville,

Thanks so much for considering my candidacy for member of the Somerville Zoning and/or Planning Board. I was very excited to learn that these roles had opened up. Quick about me, I am an engineer and economist that has lived in Somerville for six years now having joined the city in 2015 after college. I have had the fortune of living in a variety of neighborhoods including East Somerville on Broadway, Ball Square by the Powder House Building, Union Square, and my current residence on Medford Street in Magoun Square. I have very much enjoyed living in this incredible city and would like to continue to live here and support in the city's development. I am excited by the ambitious goals outlined in SomerVision 2040 especially those efforts concerning housing, emission reductions, and employment growth. In an effort to help the boards execute on SomerVision 2040 goals, I bring a strong analytical problem solving approach, keen interest in zoning/land use law, and a passion for the issues.

The SomerVision 2040 plan was a pleasure to study and gives me great confidence that the city is well on it's way to making the city a better place. Regarding housing affordability, solutions including increasing housing supply, improving inclusionary zoning, and updates to condo ordinances are great steps to stabilize rent prices in the city. 20% inclusionary zoning to bring the city inline with Boston and Cambridge will surely be helpful. I wonder if more joint effort between the city and its universities can be done to increase housing supply and revamp existing housing stock. More work is needed as demand for housing in the city outpaces supply but these are important steps that will make lasting improvements. On the topic of carbon emissions, building account for the lion's share of green house gas production as astutely noted in the SomerVision 2040 plan. Updating existing housing to alleviate these emissions is a challenge but policy requiring new building and renovations to minimize emissions lays groundwork for the city reaching its 80% emissions target by 2040. Executing policy to improve energy efficiency of existing housing stock sounds particularly exciting as it will surely require innovative strategy given the age of homes and cost burden of making the updates. Finally, regarding employment opportunities in Somerville, it's seems the 1:1 job to working age resident target is eminently possible especially when looking at Boston and Cambridge statistics showing greater than 1.5:1 job to resident figures. Somerville should continue to develop its reputation as a major destination the tech and healthcare industry. More lab and technical facilities sound like effective strategies for attracting business ventures from greater Boston's array of companies and burgeoning entrepreneurs.

It's my understanding that Somerville has come quite a ways in the last two decades. I am optimistic that the next two decades will bring about even greater improvements to the community than the previous two. Thank you again for reviewing my application to these Somerville boards. If appointed, I'd be a dedicated member and put forth my best efforts to support the achievement of the city's goals.

Best,  
Stefanos

# Stefanos Axios

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## EDUCATION

### **Dual Degree Program BA/BS**

**Columbia University, Fu Foundation School of Engineering & Applied Science (NY, NY)**

2013 - 2015

*Bachelor of Science in Engineering Mechanics*

**Brandeis University (Waltham, Massachusetts)**

2010 - 2013

*Bachelor of Arts in Economics*

*Relevant Skills & Courses* Dynamics & Vibrations, Theory of Vibrations, Partial Differential Equations, Advanced Mechanics of Solids, Finite Element Analysis, Experimental Mechanics of Materials, Programming in Java

## EXPERIENCE

### **EO VISTA (Acton, MA)**

September 2020 – Present

*Lead Structural Engineer*

- Lead structural engineering effort for the government earth weather observation satellite
- Design, analyze, and test satellite to perform and survive launch and on orbit environments
- Lead company 3D printing efforts for advancing additive manufacturing capabilities
- Lead company outreach for recruitment of early career engineers

### **L3Harris Technologies SSG (Wilmington, MA)**

*Program Manager & Lead Mechanical Engineer*

August 2019 – August 2020

- Program manager and lead mechanical engineer for fast paced small satellite program supporting the Hera Systems imaging startup. Lead all activities supporting assembly, integration, test, and shipment of a 10kg Cassegrain telescope over the course of twelve months
- Lead mechanical engineer on production earth imaging telescope program responsible for opto-structural design, analysis, and test. Led program for a duration of approximately sixteen months
- Coordinated and actively completed activities from assembly through camera alignment and final shimming. Took focus measurements of telescope. Determined camera shims for best focus. Executed random vibration testing successfully, acquired final focus and MTF measurements, and integrated telescope into bus for shipment to launch site. Coordinated budget, schedule, and technical progress with customer

*Mechanical Engineer*

June 2015 – August 2019

- Led and supported analysis for multiple satellite programs including SkyBox, Planet Labs, Blacksky, and NASA missions. NASA projects include Lucy and Europa optical telescopes. Support design to meet SWAP and optical performance requirements
- Designed and analyzed silicon carbide metering structures for variety of telescopes. Analysis via hand numbers and finite element. Designed for margin against quasi-static, vibration, and thermal environments. Present results at CDR's, customer meetings, and internal technical presentations
- Analysis of fastener sizing for margin against gapping, slip, stress, and thermal preload loss in accordance with NASA-STD-5020. Built system level FEM with CBUSH, DOF springs, and bar elements for extracting fastener loads under various environments
- Create system and subassembly finite element models in FEMAP. Conduct analysis including quasistatic stress, modal, thermal soaks, and random vibration. Coarse models with QUAD4, rigid, and mass elements. Detailed models with TET10, HEX8 etc.
- Generate response and force limited vibration test load profiles in accordance with NASA-HDBK-7004. Determine limiting schemes to match spacecraft deck impedance predictions for protecting components of payload from over test
- Lead preparation and execution of payload level vibration tests. Procedures, instrumentation of payload, and running test
- Determine fatigue on flight and test components for understanding lifespan against test and on orbit loads. Utilize standard techniques including Miners rule and Goodman formulation. Fracture mechanics, Paris Rule, for crack sensitive materials
- Support design of optical telescope components, work with vendors for quotes, requirements, and manufacturing issues
- Provide build guidance to manufacturing group and technicians on assembly floor. Procedures, drawings, assembly issues etc.

## Research Experience

**Columbia University (NY, NY)**

*“Temperature Curling of a Functionally Graded Material Plate”*

Fall 2014

Completed research on properties and analysis techniques in relation to functionally graded materials under thermal soak

## TECHNICAL SKILLS

**Testing / Analysis Tools:** LMS, NASTRAN, FEMAP, *Roark's Formulas for Stress and Strain*, *Timoshenko Theory of Plates and Shells*, FEMCI, Autodesk Inventor, MATLAB, GD&T, MATHCAD, NASA-STD-5020, NASA-HDBK-7004

**Test / Analysis Experience:** Force & response limiting vibration testing, Fatigue Failures, Test Equipment troubleshooting, Structural engineering, FEA, Opto - Structural Design & Analysis, gimbal design and bearing analysis

**Testing Equipment:** Vibration Shakers, Accelerometers, TEACS, Force Summing Amplifier, Signal Conditioners

## ACTIVITIES AND AWARDS

**L-3 SSG Excellence Award (April 2017):** Awarded for leadership and technical acumen for successful completion of system level vbe

**L-3 SSG Engineer Mentorship Program (Oct. 2017- Present):** One of two engineers in ME department appointed to participate in knowledge transfer program directed by SSG Senior Principal Mechanical Engineer, SPIE Fellow, and published author. **Editor**

**Graduate Level Opto-Structural Analysis Text (Oct 2016 – Dec 2017):** Publication Spring 2018