In [11]:
```
import pandas as pd
import numpy as np
import seaborn as sb
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeRegressor
from sklearn.metrics import accuracy_score
from sklearn.metrics import mean_squared_error, r2_score
```

In [12]:
```
df = pd.read_csv('Alumni Giving Regression (Edited).csv')
```

In [13]:
```
df.head()
```

Out[13]:

	A	B	C	D	E	F
0	24	0.42	0.16	0.59	0.81	0.08
1	19	0.49	0.04	0.37	0.69	0.11
2	18	0.24	0.17	0.66	0.87	0.31
3	8	0.74	0.00	0.81	0.88	0.11
4	8	0.95	0.00	0.86	0.92	0.28

In [14]:
```
df.describe()
```

Out[14]:

	A	B	C	D	E	F
count	123.000000	123.000000	123.000000	123.000000	123.000000	123.000000
mean	17.772358	0.403659	0.136260	0.645203	0.841138	0.141789
std	4.517385	0.133897	0.060101	0.169794	0.083942	0.080674
min	6.000000	0.140000	0.000000	0.260000	0.580000	0.020000
25%	16.000000	0.320000	0.095000	0.505000	0.780000	0.080000
50%	18.000000	0.380000	0.130000	0.640000	0.840000	0.130000
75%	20.000000	0.460000	0.180000	0.785000	0.910000	0.170000
max	31.000000	0.950000	0.310000	0.960000	0.980000	0.410000

In [15]:
```
X = df[['A', 'B', 'C', 'D', 'E']]
y = df['F']
```

In [16]:
```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, rando
```

In [17]:
```
model = DecisionTreeRegressor()
```

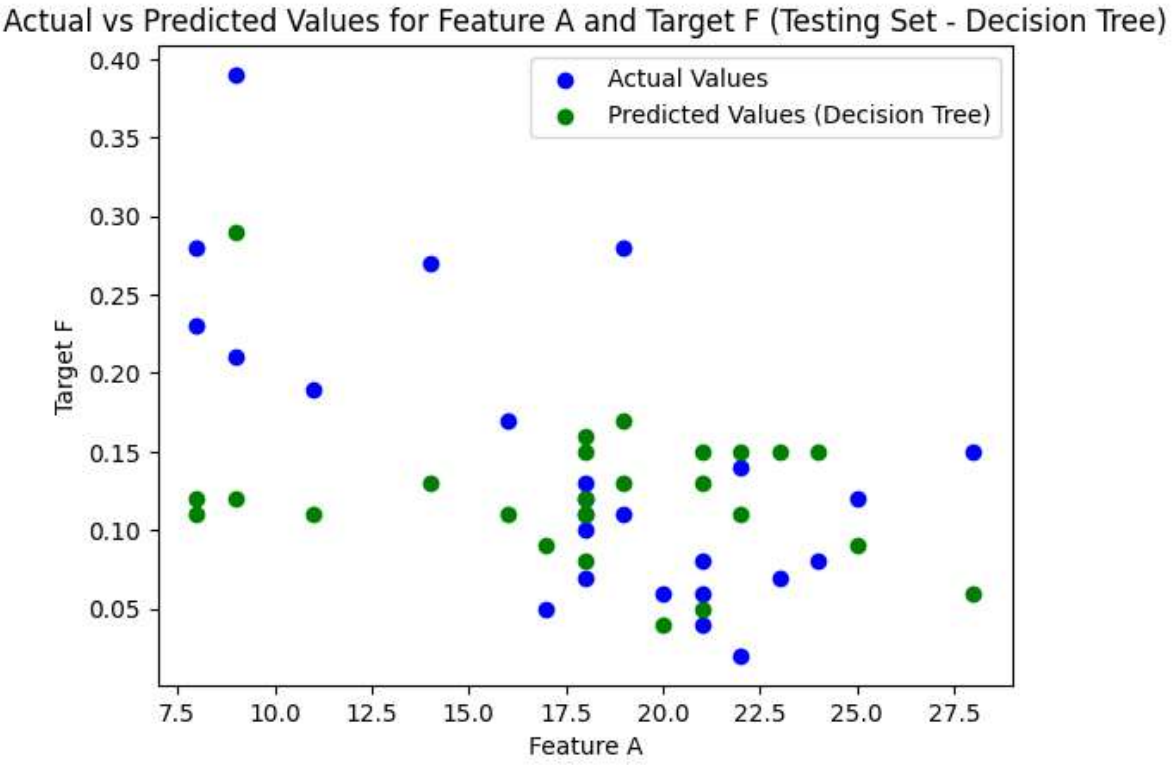
In [18]:
```
model.fit(X_train, y_train)
```

Out[18]:
```
DecisionTreeRegressor()
```

In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org.

In [34]:
```
y_pred = model.predict(X_test)
```

In [39]:
```
plt.scatter(X_test['A'], y_test, color='blue', label='Actual Values')
plt.scatter(X_test['A'], y_pred, color='green', label='Predicted Values (Decisi
plt.xlabel("Feature A")
plt.ylabel("Target F")
plt.title("Actual vs Predicted Values for Feature A and Target F (Testing Set -
plt.legend()
plt.show()
```



In [1]:
```
import pandas as pd
import numpy as np
import seaborn as sb
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.ensemble import RandomForestRegressor
from sklearn.metrics import mean_squared_error
```

In [2]:
```
df = pd.read_csv('Alumni Giving Regression (Edited).csv')
```

In [3]:
```
df.head()
```

Out[3]:

	A	B	C	D	E	F
0	24	0.42	0.16	0.59	0.81	0.08
1	19	0.49	0.04	0.37	0.69	0.11
2	18	0.24	0.17	0.66	0.87	0.31
3	8	0.74	0.00	0.81	0.88	0.11
4	8	0.95	0.00	0.86	0.92	0.28

In [4]:
```
df.describe()
```

Out[4]:

	A	B	C	D	E	F
count	123.000000	123.000000	123.000000	123.000000	123.000000	123.000000
mean	17.772358	0.403659	0.136260	0.645203	0.841138	0.141789
std	4.517385	0.133897	0.060101	0.169794	0.083942	0.080674
min	6.000000	0.140000	0.000000	0.260000	0.580000	0.020000
25%	16.000000	0.320000	0.095000	0.505000	0.780000	0.080000
50%	18.000000	0.380000	0.130000	0.640000	0.840000	0.130000
75%	20.000000	0.460000	0.180000	0.785000	0.910000	0.170000
max	31.000000	0.950000	0.310000	0.960000	0.980000	0.410000

In [5]:
```
X = df[['A', 'B', 'C', 'D', 'E']]
y = df['F']
```

In [6]:
```
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, rando
```

In [7]:
```
model = RandomForestRegressor(n_estimators=100, random_state=42)
```

In [8]:
```
model.fit(X_train, y_train)
```

Out[8]:
```
RandomForestRegressor(random_state=42)
```

In a Jupyter environment, please rerun this cell to show the HTML representation or trust the notebook.
On GitHub, the HTML representation is unable to render, please try loading this page with nbviewer.org.

In [9]:
```
y_pred = model.predict(X_test)
```

In [10]:
```
mse = mean_squared_error(y_test, y_pred)
print(f"Mean Squared Error: {mse}")
```

```
Mean Squared Error: 0.0038105840000000005
```

In [12]:
```
plt.scatter(X_test['A'], y_test, color='blue', label='Actual Values')
plt.scatter(X_test['A'], y_pred, color='red', label='Predicted Values')
plt.xlabel("Feature A")
plt.ylabel("Target F")
plt.title("Actual vs Predicted Values for Feature A and Target F (Testing Set)"
plt.legend()
plt.show()
```